Revitalizing Auto Communities
Environmental Response Trust

February 25, 2020

U.S. EPA Region 5
Remediation and Reuse Branch
Land and Chemicals Division, LU-9J
77 West Jackson Blvd.
Chicago, IL 60604-3590
Attn: Molly Finn

RE: 2019 Groundwater Monitoring Report
RACER Trust Moraine Facilities
Moraine, Ohio

Dear Ms. Finn:

The Revitalizing Auto Communities Environmental Response Trust (RACER Trust) is providing this 2019 Groundwater Monitoring Report for the RACER Trust Moraine Facilities in Moraine, Ohio. This report presents the groundwater monitoring activities conducted to assess the performance of the current corrective measures completed in 2019 at the following facilities located in Moraine, Ohio: former Delphi Harrison Thermal Systems Moraine Plant; former General Motors Powertrain Group, Moraine Engine Plant; and former General Motors Truck Group, Moraine Assembly Plant.

If you have any questions, please contact me at (937) 751-8635.

Sincerely,

Pamela L. Barnett

Pamela L. Barnett, PG
Cleanup Manager (DE, LA, MA, OH, PA, VA)
RACER Trust

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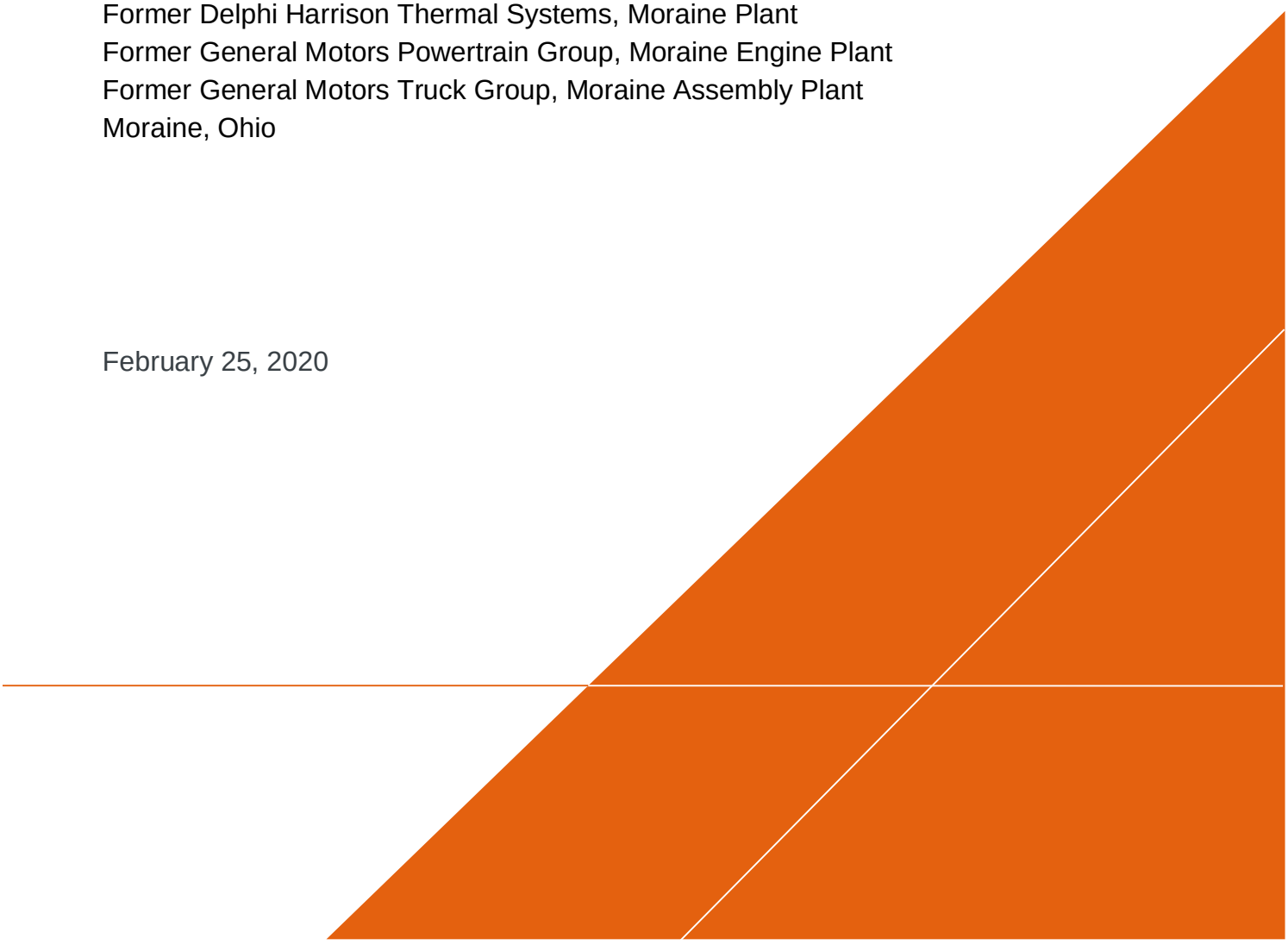
Revitalizing Auto Communities Environmental Response Trust (RACER Trust)

2019 GROUNDWATER MONITORING REPORT

Former Delphi Harrison Thermal Systems, Moraine Plant
Former General Motors Powertrain Group, Moraine Engine Plant
Former General Motors Truck Group, Moraine Assembly Plant
Moraine, Ohio

February 25, 2020



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1 INTRODUCTION

This 2019 Groundwater Monitoring

Report summarizes the groundwater monitoring activities completed in 2019 at the Revitalizing Auto Communities Environmental Response Trust (RACER Trust) Moraine Facilities (formerly General Motors Corporation [former GM Corporation]) located in Moraine, Ohio (Site; **Figure 1**). The facilities included:

- former Delphi Harrison Thermal Systems Moraine Plant (former Delphi Thermal Moraine)
- former General Motors Powertrain Group, Moraine Engine Plant (former Moraine Engine)
- former General Motors Truck Group, Moraine Assembly Plant (former Moraine Assembly)

Current property owners and parcel boundaries associated with the Site are shown on **Figure 2**.

This report summarizes the 2019 groundwater monitoring program (**Table 1**) and the performance of the ongoing interim measures (**Figure 3**). These interim measures were included in the Interim Measures/Corrective Measures (IM/CM) Report (Arcadis G&M, Inc. 2001) and incorporate the Former Oil House Area interim measures (in-situ remediation of upper aquifer groundwater); the capture zone interim measure (downgradient pumping of the lower aquifer); institutional actions (the Site will remain industrial and groundwater use will be restricted); and a groundwater monitoring program. Additional interim measure Phase I Dynamic Groundwater Recirculation (DGR™) was implemented in 2019 to address off-site vapor intrusion under the design basis submitted in 2018 (Arcadis, 2018a).

The groundwater monitoring for the facilities was conducted in accordance with the Addendum to the Site-Wide Groundwater Monitoring Report for 2016 (Addendum; Arcadis, Inc. 2017a) and the 2018 Groundwater Monitoring Report (Arcadis, Inc. 2019a).

Additional groundwater monitoring was completed in 2019 with recent sewer main work by Montgomery County off-site and downgradient west of the Great Miami River and just south of the Moraine Airpark. Select Montgomery County installed piezometers were sampled to evaluate upper aquifer concentrations of site-specific volatile organic compounds (VOCs) and poly- and perfluorinated alkyl substances (PFAS).

1.1 Site Description

The Site has been used for industrial purposes since the property was acquired in the mid-1920s by former GM Corporation. The former Moraine Engine and Moraine Assembly facilities occupy approximately 282 acres, while the adjacent former Delphi Thermal Moraine facility occupies approximately 143 acres (Montgomery County Engineer's Office). The facilities are in the City of Moraine, Montgomery County, southwestern Ohio. A small portion of the Moraine Assembly facility is in the City of Kettering. **Figure 1** presents the location of each facility, property boundaries, and site features.

Frigidaire (a former division of former GM Corporation) produced appliances from the late 1920s until 1979. Former GM Corporation announced the shutdown of all Frigidaire operations in January 1979. During 1980 and 1981, the majority of the former Frigidaire Plant 2 was converted to the former Moraine Engine facility, and the former Frigidaire Plant 3 and the northeast corner of former Frigidaire Plant 2 were converted to the Moraine Assembly facility. Since 1981, former Moraine Engine operations have

included the machining, painting (this operation was discontinued in September 1995), and assembly of diesel truck engines. Operations at the former Moraine Engine facility ceased in the fall of 2000. The plant building has undergone decommissioning and demolition, and the majority of this site has been covered with a parking surface. Former GM Corporation operated a regional haulaway at the location of the former Moraine Engine plant, which was referred to as the Vehicle Distribution Center. Operations at the regional haulaway ceased in December 2008.

Beginning in 1981, former Moraine Assembly operations included the manufacturing, assembly, and painting of small trucks and later sport utility vehicles. Operations at the former Moraine Assembly ceased in December 2008. Currently, an active diesel engine manufacturer, DMAX Ltd. (DMAX), is located north of former Delphi Thermal Moraine, on Lot #5416. DMAX is a joint venture between General Motors and Isuzu. This area was historically associated with the former Moraine Assembly and Engine Plant operations.

Former Delphi Thermal Moraine's major operations, which began in 1941, included the machining and assembly of automotive air conditioning compressors, accumulator dehydrators, and miscellaneous air conditioning valves. Operations at the former Delphi Thermal Moraine Building 14 ceased in September 2003, and the building was decommissioned. Demolition of Building 14 was completed in 2005.

On June 1, 2009, former GM Corporation and certain subsidiaries filed voluntary petitions for relief under Chapter 11 of the Bankruptcy Code. An order was entered approving the sale of substantially all of former GM Corporation's assets to a new and independent company (now known as General Motors Company, LLC) under Section 363 of the Bankruptcy Code on June 5, 2009. The sale closed on July 10, 2009. At that time, former GM Corporation changed its name to Motors Liquidation Company (MLC). RACER Trust was established on March 31, 2011 by a federal bankruptcy court to own, manage, remediate, and revitalize the properties from the 2009 former GM Corporation bankruptcy.

On June 30, 2011, RACER Trust sold former Delphi Thermal Moraine (with the exception of the South Lagoon), former Moraine Engine Plant, and former Moraine Assembly Plant to Industrial Realty Group Moraine, LLC (IRG). As part of the property transfer, RACER Trust retained environmental liability for these properties.

Current Site operations include multi-tenant use for commercial and industrial purposes. The closed South Settling Lagoon was not included in this property transaction. The closed South Settling Lagoon was retained by RACER Properties LLC (Lot #1034).

On September 29, 2011, the Administrative Order on Consent (AOC) for the Site was fully executed proceeding under Section 3008(h) of the Resource Conservation and Recovery Act (RCRA), as amended, 42 United States Code (U.S.C.) Section 6928(h), United States Environmental Protection Agency (U.S. EPA) Docket No: RCRA-05-2011-0016. The performance–based AOC covers corrective action for past releases of hazardous contaminants at or from the Site.

IRG currently leases several portions of the Site for industrial purposes and has sold several portions of the property. Select parcels were transferred from IRG to the affiliated Industrial Commercial Properties LLC (ICP). **Figure 2** provides details of the established parcels and current owners. The following list represents current ownership of the Site:

- IRG owns Lot 5458 and the northern portion of Lot #5519.

  - Lot #5458 is currently a vacant area covered by pavement.
  - Lot #5519 is currently occupied by Norfolk Southern and contains rail spurs.
- ICP owns Lots #5418, 5435, 5437, and 5523:
  - Lot #5418 is currently comprised of a vacant industrial building and parking lot.
  - Lot #5435 is currently a vacant area covered by pavement and grass.
  - Lot #5437 is currently comprised of a vacant industrial building, paved surface, and wooded area.
  - Lot #5523 is currently comprised of a vacant industrial building, paved surface, and wooded area.
- Both IRG and ICP are both listed as owners of Lot #5439. This lot is currently occupied by Fuyao Asset Management A, LLC (Fuyao).
- Copart of Connecticut, Inc. (Copart) owns Lot #5433. Copart currently utilizes this lot to store cars for online auctions.
- Fuyao owns Lots #1, #2, #5438. Fuyao currently produces and stores Original Equipment Manufacturer automotive glass at this facility.
- Inland Property Management, Inc. owns Lot #5436. This lot is currently occupied by RJ Trucking, Inc.
- Wright Warehousing, Inc. owns Lot #5459. A newly constructed office building is present, and mulch is stored on this lot.
- The State of Ohio owns Lot #5460. A full-service Ohio Department of Transportation facility occupies this lot.
- Norfolk Southern owns Lots #5521, 5524 and the southern portion of Lot #5519. These lots are currently occupied by rail spurs and used as an equipment storage area.

1.2 Groundwater Monitoring Program Objectives

The baseline groundwater sampling event for VOCs was conducted in September 1999. The next site-wide groundwater sampling event was completed in September and October 2000, and included sample analysis for additional constituents (Appendix IX chlorinated VOCs, cis-1,2-dichloroethence [cis-1,2-DCE], SVOCs, and metals) in order to narrow down the constituents of concern at the Site. The results from the 1999 baseline event and the 2000 site-wide event confirmed chlorinated VOCs are the constituents of concern and are presented in the IM/CM Report (Arcadis G&M, Inc., 2001). The site-specific VOCs (site-specific VOCs) include: benzene, 1,1-dichloroethane (1,1-DCA), 1,1-dichloroethene (1,1-DCE), cis-1,2-dichlorothene (cis-1,2-DCE), trans-1,2-dichloroethene (trans-1,2-DCE), ethylbenzene, tetrachloroethene (PCE), toluene, 1,1,1-trichloroethane (1,1,1-TCA), trichloroethene (TCE), vinyl chloride, and xylenes.

Since the baseline groundwater monitoring event, emerging contaminants were addressed. In 2016, groundwater samples were collected for 1,4-dioxane analysis in addition to the site-specific VOCs. Overall, results of the 1,4-dioxane investigation provided insight into the distribution of concentrations at the Site, suggest that 1,4-dioxane attenuation in groundwater is occurring primarily via physical processes, and indicate that soil is not an identified source of 1,4-dioxane to groundwater. Consequently, no additional investigation or analysis is proposed (Arcadis, Inc. 2017b). In addition, PFAS was analyzed

in 2018 during two sampling events, to evaluate potential PFAS concentrations based on historical industrial processes, evaluate potential PFAS concentrations closer to the source area of the site-specific VOC plume, monitor concentrations at the property boundary, and provide supplemental data for the City of West Carrollton (Arcadis Inc., 2018b and 2018c). During the first event, in August 2018, there were detections for PFAS, and an exceedance of the U.S. EPA Health Advisory Level (HAL) for the combined concentration of perfluorooctanoic acid (PFOA) and perfluorooctanesulfonic acid (PFOS) at monitoring well GM-35. The sampling event was repeated in December of 2018, with no exceedances of the HAL (Arcadis Inc., 2019a).

The objectives of groundwater monitoring in 2019 at the Site are as follows:

1. Monitor groundwater quality west of the Miami River near the Miami Shores neighborhood, and downgradient of the Site. In addition, monitor groundwater in the vicinity of sewer installation work in this area at the request of Montgomery County utilizing county installed piezometers.
2. Monitor the effectiveness of lower aquifer capture (DN-13) downgradient of the property boundary.
3. Monitor the effectiveness of interim measures activities at recently inactivated in-situ reactive zones RZ-1, RZ-3 west, RZ-3 east, and RZ-4 east.
4. Monitor groundwater quality upgradient and downgradient of the closed North and South Settling Lagoons.
5. Provide baseline conditions to monitor the performance of the upper aquifer Phase 1 DGR™ system and future plum stability evaluations.

1.3 Interim Measures

1.3.1 Source Areas and Diffuse Groundwater VOC Plume Treatment

The reductive dichlorination of chlorinated VOCs can be enhanced by the introduction of a carbon source that stimulates activity of indigenous microorganisms. The high carbon loading triggers a succession of microbial species. Initial, aerobic electron acceptors such as oxygen and nitrate are consumed. Then, the microbial succession leads to a consortium of species that survive by sulfate reduction, methanogenesis, and other similar metabolic pathways supporting the highly reducing conditions necessary for the dichlorination of PCE, TCE, cis-1,2-DCE, and vinyl chloride. This ERD process has been developed at the Site using in-situ reactive zones for the introduction of a degradable carbon source (a dilute solution of molasses and potable water) necessary to develop the desired reducing conditions.

The ERD process was implemented at the Site in 1999 to address impacts at the former Oil House Area and downgradient diffuse plume VOC concentrations at the in-situ reactive zones RZ-1, RZ-2, RZ-3 East, and RZ-3 West. RZ-4 East was designed and installed based on the data obtained from the Supplemental Groundwater Investigation completed in 2006. The in-situ reactive zones are shown on **Figure 4**.

Since 2006, the injection frequency at the different reactive zones has been modified or suspended based on VOC concentrations and the organic carbon degradation trend. Monitoring data collected from GM-19S, GM-21, and GM-32 during the site-wide annual sampling event in October 2014 confirmed that the

ERD process has not been adversely affected as a result of the revised injection frequency. Specifically, methane, ethane, ethene, and VOC analytical data were consistent with historic data.

In 2018, injections were implemented on a quarterly basis. This frequency was continued in the first quarter of 2019 only at RZ-3 West. The "2018 Groundwater Monitoring Report" recommended that active injections be suspended on an interim basis to prepare groundwater conditions for the installation and operation of the Phase 1 DGR™ system (discussed below in Section 3.3) (Arcadis, 2018a). On May 20, 2019, RACER Trust received approval from the U.S. EPA to suspend the quarterly injections at all of the reactive zones via direct email communication. Therefore, carbon source solution introductions were not completed during the second through fourth quarters of 2019. Carbon source solution injection volumes in 2019 are summarized on **Table 2**. In-situ reactive zones performance results for 2019 are discussed in **Appendix A**.

The current primary site-specific VOC source area is within groundwater at the former Process Sump Area (PSA) (Arcadis, Inc. 2012a, 2015a, 2016). In July 2017, the Primary Groundwater Source Area Interim Measures Work Plan Addendum (Arcadis, Inc. 2017C) was submitted to the U.S. EPA and approved on July 21, 2017 (U.S. EPA 2017a). This Work Plan detailed the design basis and methodology for implementation of an ERD pilot test in the PSA. The associated field activities were completed in the fourth quarter of 2017 and first quarter of 2018. The results of this pilot test were submitted to the U.S. EPA on July 22, 2019 (Arcadis Inc., 2019b).

1.3.2 Diffuse Groundwater VOC Plume Treatment

Dynamic Groundwater Recirculation (DGR™) involves hydraulic containment of the dissolved-phase site-specific VOCs near the property boundary at the former South Settling Lagoon in combination with groundwater recirculation to enhance advective flushing by creating the dynamic gradients required to reverse the processes of plume development, with routine optimization to achieve optimal performance. The objective of the Phase I DGR™ interim measure is to reduce site-specific VOCs in groundwater within the downgradient Riverview Plat neighborhood (neighborhood) to concentrations below the Maximum Contaminant Levels (MCLs) within 5 years of initiating full-scale operation (**Figure 3**). The direct benefit of addressing site-specific VOCs within the neighborhood is a reduced vapor intrusion risk for structures within the neighborhood that have not provided access for installation of a vapor intrusion mitigation system.

The upper aquifer Phase I DGR™ construction activities were completed on October 24, 2019 in accordance with the Phase 1 Dynamic Groundwater Recirculation (DGR™) Interim Measure (IM) Design Report and Work Plan (Arcadis, 2018a). Following an initial shake down period, the system operation began on October 28, 2019 at 09:30. Baseline groundwater samples and hydraulic information were collected as part of the July groundwater monitoring event presented in this report.

Current preliminary data collected indicates that the system is functioning as designed and baseline conditions are summarized in **Section 2.5.3** and **Section 3.3**. The system performance will continue to be evaluated and results will be included in forthcoming Quarterly Progress Reports and Groundwater Monitoring Reports.

1.3.3 Lower Aquifer Capture

Well DN-13 is a lower aquifer extraction well that is owned and operated by Montgomery County and has been used in a Pump-to-Waste Program since March 1990 in cooperation with former GM Corporation/ MLC until March 31, 2011 and continued with RACER Trust. The capture zone interim measure for the lower aquifer consisted of continued pumping of DN-13 in 2019. Samples at the DN-13 invert outfall and well flow rate data are collected on a monthly basis as a requirement of the National Pollutant Discharge Elimination System (NPDES) permit, and the results are submitted to the Ohio Environmental Protection Agency (Ohio EPA). Well DN-13 was operational throughout 2019 except for the periodic shutdowns related to power failures and for operation and maintenance activities. Details on well DN-13 operation and maintenance, and lower aquifer capture analysis are discussed in **Section 3.2**. The location of well DN-13 is shown on **Figure 3**.

2 GROUNDWATER MONITORING SUMMARY

To meet the objectives of the groundwater monitoring program in 2019, the scope of work presented in Site-Wide Groundwater Monitoring Plan (Arcadis G&M, Inc. 2002), the Addendum (Arcadis, Inc. 2017a), and the 2018 Groundwater Monitoring Report (Arcadis, 2019a) were completed. Groundwater sampling field data are included as **Appendix B**. The analytical data summary including quality assurance results are included as **Appendix C**.

The 1999 baseline through 2019 groundwater quality data for the site-specific VOC parameter list are summarized in **Appendix D**. For 2019, the site-specific VOC groundwater data is summarized in **Table 3** of this report. This information is used to assess the effectiveness of the on-going interim measures, monitoring the closed settling lagoons, and monitoring shallow upper aquifer VOC concentrations near the Miami Shores neighborhood. Monitoring for site-specific VOCs and PFAS in off-Site Montgomery County piezometers was also completed in 2019 (**Table 4**). The following sections summarize the data collected.

2.1 Groundwater Elevation Monitoring

Groundwater levels were measured on July 2 and 9, 2019. The measured wells included on-site and off-site monitoring wells located in and around the North and South Settling Lagoons as shown on **Figures 7** and **8,** respectively (upper aquifer wells) and in the area of DN-13 as shown on **Figure 9** (lower aquifer wells). Groundwater levels were measured in accordance with procedures defined in the Phase 1 Dynamic Groundwater Recirculation (DGR™) Interim Measure Pilot Test Work Plan, Standard Operating Procedure (SOP) #17 (Arcadis, Inc. 2017d).

2.2 Monthly Groundwater Discharge Monitoring

The NPDES permit was revised in 2012 to include lower aquifer well DN-13 as a separate final outfall to the Great Miami River and remove the north and south retention basins (historic upper aquifer interim measure recovery system [TW-2] is an intermediate monitoring station prior to discharge to south storm water retention basin), as they were included with the property sold to IRG in 2011. The Ohio EPA approved renewal of NPDES Permit 1IC00008*KD for the internal outfall related to TW-2 and for the DN-13 outfall on December 1, 2017. The permit requires monthly monitoring and reporting at the current operating DN-13 lower aquifer pumping.

The historic TW-2 groundwater recovery and treatment system was shut down on July 31, 2012 (Arcadis, Inc. 2012b). As discussed in the April 24, 2013 letter to the U.S. EPA (Arcadis, Inc. 2013), shutdown monitoring of the groundwater recovery and treatment system continued through 2014. Current data suggests that continued shutdown of this system is recommended based on the results of groundwater monitoring since TW-2 system shutdown.

Table 5 summarizes the VOC results for the monthly DN-13 effluent sampling during 2019. The analyses were conducted in accordance with methods specified in the NPDES Permit 1IC00008*KD.

2.3 2019 Groundwater Monitoring Program

In 2019, the following wells were sampled to assess the groundwater monitoring program objectives, as detailed in **Section 1.2**:

- Off-Site Groundwater Monitoring: GM-80, RMW-95, RWM-96, and RMW-97
- Performance Monitoring of DN-13: DN-13, GM-9, GM-15, and GM-20D
- Performance Monitoring of IRZs:
  - RZ-3 West: GM-6 and GM-8; GM-32 (TOC only)
  - Inactive RZ-1: GM-23, GM-27, GM-28R and GM-29
  - Inactive RZ-3 East: GM-2, GM-21
  - Inactive RZ-4 East: GM-19S
- Closed North and South Settling Lagoons:
  - Closed North Settling Lagoon: HR-4, W-2-N, W-3-N, and W-4-N
  - Closed South Settling Lagoon: HR-17, W-2-S, W-3-S, and W-4-S
- Performance monitoring of the Phase 1 DGR™ system: HR-16, GM-16, GM-47 through GM-52, GM-63, GM-64, RMW-91 through RMW-94, RMW-98 through RMW-102, and WSU-23 (other wells overlap with the closed South Settling Lagoon wells HR-17, W-2-S, W-3-S, and W-4-S).
- Montgomery County Piezometers: BA-5S and BA-8S

A summary of the 2019 groundwater monitoring activities, including the number of monitoring wells and analytical parameters, is presented on **Table 1**. Well construction data for the wells used in the program are presented in **Table 6**.

Groundwater samples were collected from the specified wells using the low-flow methodology and following procedures outlined in SOP #14 (Arcadis, Inc., 2017c). Field parameters including pH, specific conductance, temperature, oxidation/reduction potential, and dissolved oxygen were measured during purging of each well using a multi-parameter groundwater quality meter with flow-through cell (**Appendix B**). One groundwater sample from well DN-13 was collected through the sampling valve.

The groundwater samples were collected and managed under standard chain-of-custody procedures and validated in accordance with the approved Supplemental RFI Work Plan and the RFI Quality Assurance Project Plan (Geraghty & Miller, Inc. 1997) and as presented in the draft Amended Quality Assurance Project Plan (Arcadis, Inc. 2011). Analytical results are presented and discussed in **Section 2.5.3**.

2.4 Laboratory Analytical Methods

Groundwater samples were analyzed for the site-specific VOC parameter list using Method 8260B. As indicated previously, additional analyses were completed to support the effectiveness of ERD at the Site. These results are summarized in **Appendix A**.

Select groundwater samples from upper aquifer monitoring wells collected during the groundwater monitoring event were also analyzed for the following biogeochemical indicator parameters: manganese (total and dissolved), iron (total and dissolved), sulfate, sulfide, TOC, chloride, dissolved gases (ethane, ethene, and methane). **Table 1** lists specific field, laboratory, and biogeochemical indicator parameters and laboratory analytical methods. The groundwater samples were submitted to Eurofins TestAmerica Laboratories, Inc. (TestAmerica) in North Canton, Ohio. Samples for analysis for ethene, ethane, and methane were also submitted to Microseeps/Pace Analytical Energy Services, LLC in Pittsburgh, Pennsylvania.

In addition, at the request of Montgomery County, samples were collected from two piezometers located at the Moraine Airpark (BA-5S and BA-8S). These samples were analyzed for the site-specific VOC parameter list using Method 8260B as described above, and PFAS using EPA Method 537. The VOC samples were submitted to TestAmerica in North Canton, Ohio, and the PFAS samples were submitted to the TestAmerica in Sacramento, California.

2.5 Groundwater Monitoring Program Results

2.5.1 Groundwater Elevation Monitoring

As part of the 2019 groundwater monitoring program, a reduced set of groundwater levels were measured to verify and determine groundwater flow directions, horizontal hydraulic gradients, and vertical hydraulic gradients in and between the upper and lower aquifers. The reduced set was used to target specific areas for focus within the upper and lower aquifer related to the former North and South Settling Lagoons, Phase I DGR™, and DN-13 capture. Groundwater elevation monitoring events were completed on July 2 and 9, 2019. The groundwater level measurement data are presented on **Table 7**.

2.5.1.1 Upper Aquifer

Depth-to-water data from upper aquifer wells were collected on July 2 and 9, 2019, and focused contour maps of the potentiometric surface were generated for the closed North and South Settling Lagoons (**Figures 7 and 8, respectively**). The closed South Settling Lagoon correlates with the Phase I DGR™ area and serves as a baseline understanding of groundwater flow prior to system operation later in 2019. Groundwater flow for the upper aquifer is generally from northeast to southwest. The general groundwater flow conditions for 2019 are consistent with historical groundwater flow conditions documented in the previous groundwater monitoring reports.

Table 8 presents the 2019 monthly precipitation totals, recorded by the National Weather Service, and the deviation from reported average amounts. The 2019 annual total precipitation recorded at the Dayton, Ohio monitoring station was 42.97 inches, which was 1.92 inches above average.

Horizontal hydraulic gradient values within the upper aquifer in 2019 average 9.0×10^{-4} foot/feet (ft/ft), based on the two well pairs presented in **Table 9**. Using the range in hydraulic conductivity values measured for the sand and gravel facies of the upper aquifer (180 to 3,500 ft/day), long-term site-wide horizontal hydraulic gradient of 4.7×10^{-4} ft/ft, and effective porosity of 10%, the estimated advective groundwater velocity ranges from 0.8 to 16 ft/day for the majority of the upper aquifer (Arcadis, 2012a).

2.5.1.2 Lower Aquifer

Depth-to-water data from lower aquifer wells in the area around DN-13 were collected on July 2, 2019 and a contour map of the potentiometric surface was generated (**Figure 9**). Groundwater flow for the lower aquifer is generally from northeast to southwest towards pumping well DN-13. An estimated cone of depression surrounds pumping well DN-13 as indicated by influence of the surrounding monitoring wells (**Figure 9**). Hydraulic capture of lower aquifer groundwater by DN-13 is discussed further in **Section 3.2**. The general groundwater flow conditions for 2019 are consistent with historical groundwater flow conditions, with DN-13 in operation.

Horizontal hydraulic gradients in relation to lower aquifer pumping at DN-13 are discussed in **Section 3.2**.

2.5.2 Vertical Hydraulic Gradients

Vertical hydraulic gradients between the upper aquifer and the lower aquifer were calculated for the groundwater elevation data collected on July 2, 2019 within the vicinity of DN-13. A total of 4 pairs of upper and lower aquifer wells were used (**Table 9**). Vertical gradients were calculated using the following equation:

$$I_V = \frac{h_{upper} - h_{lower}}{D_v}$$

Where

I_v = vertical hydraulic gradient (ft/ft)

h_{upper} = groundwater elevation in upper aquifer monitoring well (feet above mean sea level [ft AMSL])

h_{lower} = groundwater elevation in lower aquifer monitoring well (ft AMSL)

D_v = distance between midpoint of lower screen and midpoint of saturated section of upper screen (ft)

Vertical hydraulic gradients were downward ranging between 2.4 x 10^{-3} ft/ft to 1.5 x 10^{-2} ft/ft (**Table 9**).

2.5.3 Groundwater Monitoring Analytical Results

Groundwater was sampled to evaluate the presence of site-specific VOCs based on the groundwater monitoring objectives detailed in **Section 1.2**. **Tables 3** and **4,** and **Appendix C** provide the groundwater results for 2019. The 1999 baseline through 2019 groundwater quality data for the site-specific VOC parameter list are provided in tables in **Appendix D**. The isoconcentration figures for the upper and lower aquifers were updated with the 2019 concentrations for TCE and PCE and are provided as **Figures 10** through **13**. The incorporated recent data indicate that the respective VOC plumes for the upper and lower aquifers are consistent with previous years.

2.5.3.1 Off-Site Groundwater Monitoring

Shallow upper aquifer monitoring wells that are upgradient of the Miami Shores neighborhood (GM-80, RMW-95, RWM-96, and RMW-97) were sampled in 2019. The PCE concentration at one location exceeded the MCL of 5.0 µg/L: GM-80 (15 µg/L). The other constituents were detected at relatively low concentrations or below reporting limits. The groundwater data from the Miami Shores monitoring wells

were screened against the most conservative Ohio EPA Vapor Intrusion Screening Levels (VISLs). If no VISL was available, the U.S. EPA site-specific VISLs were used (**Table 10**). The shallow upper aquifer (water-table) wells (GM-80, RMW-95, RMW-96, and RMW-97), which represent conditions closest to the downgradient receptor (i.e., residential properties), did not exceed the VISLs.

Additionally, piezometers located off-site just south of the Moraine Airpark, BA-5S and BA-8S, were sampled at the request of Montgomery County and analyzed for site-specific VOCs and PFAS. All the constituents sampled were either not detected in the groundwater or were detected at concentrations below the applicable MCL or U.S. EPA Health Advisory Level for PFAS. These analytical results are included in **Tables 3** and **4**.

2.5.3.2 Performance Monitoring of DN-13

The off-site, lower aquifer groundwater quality downgradient of the Site was evaluated with lower aquifer wells DN-13, GM-9, GM-15, and GM-20D. TCE concentrations exceeded the MCL of 5.0 µg/L in DN-13 (5.6 µg/L), GM-9 (6.0 µg/L), and GM-15 (5.7 µg/L). The other constituents were detected at relatively low concentrations or below reporting limits. Groundwater capture by extraction well DN-13 is discussed in **Section 3.2,** and isoconcentration maps are provided as **Figures 10** through **13**.

2.5.3.3 IRZ Performance Monitoring

As described in **Section 1.3.1**, during the first quarter of 2019, carbon solution was introduced only at reactive zone RZ-3 West, shown on **Figure 4**. Continued effects from recent and past injections based on the operation of the in-situ reactive zones was monitored through the collection of field parameter measurements and laboratory analyses of biogeochemical indicator parameters and site-specific VOCs, according to the Site-Wide Groundwater Monitoring Plan (Arcadis G&M, Inc. 2002) and revisions in the Site-Wide Groundwater Monitoring Report for 2009 (Arcadis, Inc. 2010). Concentrations of site-specific VOCs as related to the performance of the in-situ reactive zones are presented in this section. Groundwater concentration trends for the in-situ reactive zone performance monitoring wells are presented in **Figures 14** through **17**.

RZ-1

RZ-1 (**Figure 4**) was installed as an interim measure to remediate the area downgradient of the Former Oil House Area. Although RZ-1 was inactive in 2019, four upper aquifer wells (GM-23, GM-27, GM-28R [replacement for GM-28], and GM-29) are used to monitor the groundwater quality to evaluate the effectiveness of the reactive zone (**Figure 4**).

- PCE concentrations at monitoring well GM-23 have decreased from 15,000 µg/L in 2001 to 22 J µg/L in 2019. TCE concentrations have generally decreased from 2,200 µg/L in 2001 to 15 J µg/L in 2019. Concentrations of PCE and TCE have fluctuated slightly but generally remained below 50 µg/L since 2009. Concentrations of cis-1,2-DCE have decreased from 19,000 µg/L in 2005 to 550 µg/L in 2019. Vinyl chloride concentrations increased to a concentration of 4,100 µg/L in 2006 and have generally decreased since to a concentration of 250 µg/L in 2019. Concentrations of trans-1,2-DCE were relatively low prior to initiating introductions in 2000. Concentrations peaked in 2006 at 270 J µg/L and have generally decreased to 16 J µg/L in 2019.

- GM-27 was used periodically for evaluating groundwater conditions within the zone of influence of carbon introductions in the Former Oil House Area. GM-27 was last sampled in 2013. Since the last sampling event, TCE has decreased from 42 µg/L to 18 µg/L. All other site-specific VOCs were detected at relatively low concentrations or below reporting limits in 2019.
- Monitoring well GM-28 was used for evaluating groundwater conditions downgradient of RZ-1. Due to an obstruction in the well, monitoring well GM-28 has not been sampled since 2011. As a result, replacement monitoring well GM-28R was installed on December 21, 2015. Due to constraints associated with property access and underground utilities, monitoring well GM-28R was installed approximately 87 ft southeast of monitoring well GM-28.

  Based on the 2011 data for monitoring well GM-28, concentrations of PCE, TCE, and cis-1,2-DCE remained consistently low since peak concentrations in 1999. Vinyl chloride concentrations in GM-28 fluctuated, with a maximum concentration of 12.4 µg/L in 2000. In 2011, the vinyl chloride concentration in monitoring well GM-28 was 0.57 J µg/L. At MW-28R, the peak concentration of PCE was observed in 2015 at 49 µg/L, and the concentration dropped to less than 5 µg/L in the following years. In 2019, the PCE concentration at GM-28R increased to 13 µg/L indicating some variability in PCE trends. All other site-specific VOCs were detected at relatively low concentrations or below reporting limits in 2019.
- Monitoring well GM-29 is within the zone of influence of carbon introductions conducted in the Former Oil House Area after reactive zone RZ-1 was expanded in 2002. Concentrations of PCE and TCE have remained relatively consistent since 2000 with current concentrations of 11 J µg/L and 300 µg/L in 2019, respectively. A peak concentration of cis-1,2-DCE (2,871 µg/L) was noted in 2000, and concentrations have decreased to 380 µg/L in 2019. Concentrations of vinyl chloride have fluctuated since introductions began in 2000 but have generally decreased since 2005 with a concentration of 38 µg/L in 2019.

Overall, these results indicate that groundwater conditions have not significantly changed following the deactivation of this treatment zone (**Figure 14**).

RZ-3 East

Although reactive zone RZ-3 East was inactive in 2019, two upper aquifer wells (Gm-2 and GM-21) were used to monitor the associated downgradient groundwater quality (**Figure 4**).

- PCE concentrations in GM-21 have consistently been below reporting limits. Concentrations of TCE in well GM-21 peaked in 2002 at 230 µg/L and have generally decreased to 2.1 µg/L in 2019. Concentrations of cis-1,2-DCE have fluctuated since a peak concentration of 100 µg/L in 2003 and have generally decreased to a concentration of 10 µg/L in 2019. The maximum vinyl chloride concentration in monitoring well GM-21 (19 µg/L) was observed in 2008 and was 6.6 µg/L in 2019. The other site-specific VOCs were detected at relatively low concentrations or below reporting limits in monitoring well GM-21.
- PCE concentrations in GM-2 have varied. The concentration of PCE was 8.5 µg/L during the 2016 sampling event and currently at 28 µg/L in 2019. Concentrations of TCE have remained relatively stable.

Overall, these results indicate that groundwater conditions have not significantly changed following the deactivation of this treatment zone (**Figure 15**).

RZ-3 West

Reactive zone RZ-3 West (**Figure 4**) is located south of former Delphi Thermal Moraine. Two upper aquifer wells (GM-6 and GM-8) are used to monitor the groundwater quality to evaluate the effectiveness of the reactive zone.

- Monitoring well GM-6 is used for evaluating groundwater conditions downgradient of RZ-3 West. Concentrations of PCE and TCE decreased to below reporting limits in monitoring well GM-6 in 2005 and 2011, respectively, and remained below the respective reporting limits in 2019. All other site-specific VOCs were detected at relatively low concentrations or below reporting limits in monitoring well GM-6 in 2019.
- Monitoring well GM-8 serves as a downgradient well for reactive zone RZ-3 West. Concentrations of PCE, TCE, and cis-1,2-DCE have remained consistently low or below their respective reporting limits since 2000. Concentrations of vinyl chloride have remained at or below the reporting limit since 2007 and were below the reporting limit in 2019. The other site-specific VOCs were detected at relatively low concentrations or below reporting limits in monitoring well GM-8 in 2019.

Overall, these results indicate that groundwater conditions have not significantly changed following the deactivation of this treatment zone (**Figure 16**).

RZ-4 East

Although reactive zone RZ-4 East was inactive in 2019, one upper aquifer well (GM-19S) was used to monitor the continued influence of downgradient groundwater quality (**Figure 17**).

- Concentrations of PCE, TCE, and cis-1,2-DCE in monitoring well GM-19S have been low or below reporting limits since 2007. Concentrations of vinyl chloride reached a peak concentration of 17 µg/L in 2013 and have decreased to 3.6 µg/L in 2019. Concentrations of the other site-specific VOCs were detected at relatively low concentrations or below reporting limits and consistent with the previous sampling events.

Overall, these results indicate that groundwater concentrations have not significantly changed indicating minimal rebound in this treatment zone (**Figure 17**).

2.5.3.4 Monitoring of Closed Settling Lagoons

Groundwater quality is monitored upgradient and downgradient of the closed North and South Settling Lagoons as described in **Section 2.3**. Upgradient monitoring wells used are HR-4 for the closed North Settling Lagoon and HR-17 for the closed South Settling Lagoon (**Figure 3**). Wells downgradient of the closed North (W-2-N, W-3-N, and W-4-N) and South (W-2-S, W-3-S, and W-4-S) Settling Lagoons (closed through in-situ solidification and installation of a cover system in 2001 after the 1999 baseline sampling event) were sampled in 2019. The monitoring of the closed North and South Settling Lagoons showed that the closed lagoons do not appear to be contributing constituents to existing groundwater concentrations in the area.

On September 24, 2019, Ohio EPA provided comments regarding the 2018 Groundwater Monitoring Report (Ohio EPA 2019). In this letter, a request was made regarding the structure and content of the Supplementary Annual Reports. The 2019 Supplemental Annual Report with revised format and content is provided as **Appendix E**.

2.5.3.5 Phase I DGR™ Baseline

Baseline groundwater samples were collected in July 2019 from several monitoring wells upgradient, side-gradient, and downgradient of the Phase I DGR™ system in order to establish baseline groundwater concentrations for site-specific VOCs prior to system startup. Upgradient wells include HR-16, HR-17, RMW-91, and RMW-92. Side and downgradient wells include RMW-100/RMW-101 to the east and W-2-S/WSU-23 to the west. Downgradient wells include GM-16, GM-47 through GM-52, GM-63, GM-64, RMW-93, RMW-94, RMW-98, RMW-99, RMW-102, W-3-S, and W-4-S (**Figure 3**).

- For the upgradient monitoring wells (HR-16, HR-17, RMW-91, and RMW-92), PCE was observed at all monitoring wells. Concentrations of PCE ranged from 0.17 J µg/L at HR-16 (located west and upgradient of the Phase I DGR™ system, in the northwest corner of the South Settling Lagoon area), to 150 µg/L at HR-17 (located in the northeast corner of the South Settling Lagoon area and screened deeper just above the regional clay till). The concentrations of PCE at RMW-91 (screened deeper within the upper aquifer just above the regional clay till) are comparable to HR-17 at 130 µg/L and concentrations of PCE at RMW-92 (screened shallower in the upper aquifer) are less at 57 µg/L. Concentrations of TCE were observed at relatively low concentrations at all but one of the monitoring wells, with concentrations ranging from 1.1 µg/L at RMW-92 to 62 µg/L at RMW-91. This indicates that the PCE concentrations are relatively evenly distributed in the shallow to deeper portions of the upper aquifer in the area of HR-17 and RMW-91/92; whereas, the appreciable TCE concentrations occur deeper and to the east in the area of RMW-91.
- For the downgradient monitoring wells (GM-16, GM-47 through GM-52, GM-63, GM-64, RMW-93, RMW-94, RMW-98, RMW-99, RMW-102, W-3-S, and W-4-S), PCE concentrations were detected at all wells, confirming the wider PCE distribution. Concentrations of PCE ranged from 1.2 µg/L at GM-49 (located the furthest downgradient to the southwest, on the east bank of the Great Miami River) to 90 µg/L at RMW-93 (located near the center of the southern property boundary of the South Settling Lagoon area). Concentrations of TCE ranged from 0.39 J µg/L at wells GM-50 and RMW-102 (both screened in shallower in the upper aquifer and located in the Riverview Plat neighborhood) to 33 µg/L at W-4-S (screened across both shallow and deeper portions of the upper aquifer and located near the southern property boundary in the South Settling Lagoon area). In general, the monitoring wells that exhibit relatively high TCE concentrations are screened at deeper intervals within the upper aquifer and confirm the upgradient TCE distribution.
- For the side and downgradient monitoring wells (RMW-100 and RMW-101; deep/shallow upper aquifer pair) to the east near Dryden Road, and W-2-S, and WSU-23 to the west), PCE concentrations were non-detect at RMW-100 to just below the reporting limit at 0.49 J µg/L at RMW-101 to higher detections at 28 µg/L at WSU-23 (located at the southwest corner of the South Settling Lagoon). Concentrations of TCE were observed to be relatively low at all wells ranging from non-detect at RMW-100 to 3.7 µg/L at WSU-23. These concentrations confirm the understanding of downgradient distribution of PCE and TCE.

Groundwater samples for the performance monitoring of the Phase I DGR™ system will be collected on a quarterly basis throughout 2020 to confirm and verify system performance. Continued data collection will be evaluated and reported in forthcoming Quarterly Progress Reports and Groundwater Monitoring Reports.

3 CORRECTIVE MEASURE PERFORMANCE

3.1 In-Situ Reactive Zone Performance Results

A detailed assessment of the effectiveness of the reactive zones and the results of this monitoring are presented in **Appendix A** and summarized below.

- Enhanced reductive dechlorination continued to achieve the desired reduction of chlorinated VOC concentrations in groundwater.
- As optimal, aquifer conditions were strongly reducing within and downgradient of the in-situ reactive zones due to the introduction of carbohydrate, as evidenced by the presence of methane at concentrations significantly above background data.
- The target compounds (PCE and TCE) were reduced to daughter products (cis-1,2-DCE and vinyl chloride) and ultimately to end products (ethene and ethane) based on the chlorinated VOC and light hydrocarbon data (ethene and ethane).
- No significant change in anaerobic conditions (e.g., the concentration of methane) or treatment effectiveness (e.g., sustained reductions in chlorinated VOC concentrations with the observation of elevated ethene and/or ethane) were observed.
- Reducing conditions are expected to continue even with injections halted for a period of time and will be monitored on an annual basis.

3.2 Capture Zone Performance Results

Pumping well DN-13 is utilized to capture site-specific VOCs in lower aquifer groundwater. To determine the effectiveness of DN-13 in this regard, several lines of evidence were evaluated following the general procedures outlined in the U.S. EPA guidance, A Systematic Approach for Evaluation of Capture Zones at Pump and Treat Systems (U.S. EPA 2008).

1. Review site data, CSM, and remedial objectives
2. Define site-specific target capture zone(s)
3. Interpret groundwater levels
4. Complete calculations for basis of hydraulic capture
5. Evaluate groundwater concentration trends
6. Interpret site capture

3.2.1 Site Data and Conceptual Site Model

The initial steps for this capture zone analysis included review of Site data and the CSM, which consists of the hydrogeologic structure, hydrogeologic properties (e.g. hydraulic conductivity), site groundwater elevations (**Table 7**), site hydraulic gradients (**Table 9**), and DN-13 operational data (e.g. pumping rates).

A depiction of the lower aquifer, including the location of the largely continuous regional clay till unit, and the screened interval of monitoring wells and DN-13 is presented in the 2012 CMP (Arcadis, Inc. 2012a). The lower aquifer hydraulic conductivity ranges from approximately 260 to 440 ft/day (Arcadis, Inc. 2012a and Geraghty & Miller, Inc. 1990). Groundwater elevation contours (i.e., potentiometric surface map) for the lower aquifer in the DN-13 area are presented on **Figure 9** and indicates that groundwater generally flows in a northeast to southwest direction and hydraulic influence by DN-13 pumping.

The approximate run-time average flow rate (pump in operation) for DN-13 in 2019 was approximately 750 gallons per minute (gpm) or 1.08 million gallons per day (MGD) while the average period (daily) rate (total flow volume averaged over the entire year – including downtime) for 2019 was approximately 643 gpm (0.93 MGD). Well DN-13 was operational for 88% of 2019 except for the periodic minor shutdowns related to power failures and for longer period of shutdown related to maintenance activities to include pump repairs and redevelopment (**Appendix F**).

3.2.2 DN-13 Pumping Well Operation and Maintenance

Well DN-13 is a lower aquifer extraction well that is owned by Montgomery County and operated by RACER Trust. Well DN-13 was part of the former Greater Moraine Water System located in the former North Dryden Road well field and has been used in a Pump-to-Waste Program since March 1990 in cooperation with former GM Corporation until March 31, 2011. The operation has continued since that time in cooperation with RACER Trust.

The interim measure for the lower aquifer at the Site consists of continued pumping of DN-13 to capture impacted groundwater. As required by the NPDES permit regulated by the Ohio EPA, the outfall for DN-13 discharges to the Great Miami River, and monthly sampling is completed to monitor water quality along with the discharge flow rate.

Operation and maintenance for DN-13 is documented in the Extraction Well DN-13 Operation and Maintenance Memorandum (Arcadis, Inc. 2015b) and the Extraction Well DN-13 Operation and Maintenance Statue Memorandum (Arcadis, Inc. 2015c). Data has been collected monthly since April 2015 and is used to evaluate the performance of extraction well DN-13 by collecting specific data to monitor extraction well performance; establishing criteria to determine reduced performance and prompt corrective action; and developing protocols for corrective action. DN-13 performance monitoring and corrective actions are detailed in the quarterly progress reports submitted to the U.S. EPA and the Ohio EPA.

Due to declining well performance, DN-13 was shut down for re-development and maintenance from October 2, 2019 to November 7, 2019. The Layne Christenson Company (Layne) removed biofouling and mineral scaling within the screen interval by physical agitation with water and nitrogen (bore blasting method) and application of glycolic acid NFW 310 solution. In addition, the motor and pump were removed, dismantled, and inspected, and video logging of the well to assess screen conditions was completed prior to and after re-development. During inspection of the pump, a large crack was observed in the intermediate stage between the suction and discharge. The pump electrical motor was also in need of maintenance. Both the pump and pump motor were refabricated and re-installed.

DN-13 re-development and pump maintenance activities were successful in improving specific capacity. Specific capacity increased from an annual low of approximately 12 gallons per minute per foot (gpm/ft) in

August 2019 to approximately 21 gpm/ft after redevelopment in October 2019. Modifications to the DN-13 flow rate continue and will be monitored and adjusted to maintain a recommended maximum drawdown elevation of 10 ft or more above the maximum allowable drawdown elevation of 649 ft AMSL. **Appendix F** provides supporting details for DN-13 operation and maintenance to include charts.

3.2.3 Site-Specific Target Capture Zone

The target capture zone for DN-13 is defined as the extent of impacted groundwater in the lower aquifer containing site-specific VOC concentrations above 5 µg/L and is best represented by the outer extent of the lower aquifer TCE plume above 5 µg/L (**Figures 13** and **18**). The pumping program at DN-13 is intended to prevent further migration of the VOC plume and to capture the VOC-impacted groundwater in the lower aquifer downgradient of the upper aquifer source area at the Site. The maximum width (perpendicular to groundwater flow) of total site-specific VOC concentrations greater than 5 µg/L in the lower aquifer was estimated to be 2,700 ft. To account for some uncertainty in the delineation, an additional 250 ft was added (i.e., 125 ft on each side), which results in an approximate plume width of 2,950 ft.

3.2.4 Interpreted Groundwater Levels

3.2.4.1 Potentiometric Surface

Groundwater elevation data are measured on an annual basis at the Site (**Table 7**), and this data can be used to support several lines of evidence to demonstrate hydraulic capture. In general, the historic and current understanding is that groundwater in the lower aquifer flows primarily from the northeast to the southwest. Groundwater elevation data from the surrounding monitoring well network near DN-13 indicate that there is a localized cone of depression in the vicinity of DN-13 with groundwater flowing towards the pumping well (**Figure 9**). An inferred capture zone was delineated by drawing flow lines perpendicular to groundwater elevation contours in the lower aquifer and is shown on **Figure 18**. The inferred delineation results in an estimated capture width of approximately 3,300 ft, just upgradient of DN-13.

3.2.4.2 Horizontal Hydraulic Gradients

In addition to capture interpretation via potentiometric surface maps, observed water-level data were also used to approximate the extent of hydraulic capture by calculating the magnitude and direction of horizontal hydraulic gradients between sets of adjacent monitoring wells located in the vicinity of the extraction well DN-13. This triangular irregular network (TIN) analysis provides a means of evaluating observed water-level data free of bias that is inherent in hand-drawn potentiometric surface maps.

Generally, monitoring well pairs are used as gradient control points for capture evaluation (i.e., used to demonstrate inward gradients or inward flow towards the pumping well). However, the current distribution of monitoring wells in the vicinity of DN-13 prohibits the designation of practical well pairs. To provide an accurate measure of the extent of hydraulic influence that DN-13 has on the lower aquifer system, hydraulic gradients were calculated to evaluate the flow direction (gradient angle and magnitude) using water-level data from sets of three adjacent monitoring wells (Devlin 2003). This method of analysis is consistent with and presented in the U.S. EPA's capture zone guidance (U.S. EPA 2008). Five sets of

adjacent monitoring wells (three per set) located in the vicinity of DN-13 were evaluated using 2019 groundwater elevation data and are shown in **Table 9** and on **Figure 19**. Results of the groundwater flow directions (hydraulic gradients) in the lower aquifer indicated effective capture of groundwater by DN-13.

3.2.4.3 Vertical Hydraulic Gradients

Vertical hydraulic gradients were calculated from available upper/lower aquifer well pairs within the vicinity of DN-13 including GM-10/GM-9, GM-16/GM-15, GM-18/GM-13, and GM-17/GM-11. The calculated vertical hydraulic gradients shown in **Table 9** indicate that a downward (negative) gradient is present within the vicinity of DN-13. The magnitude of downward vertical hydraulic gradients in the vicinity of DN-13 compared to on-site (outside immediate area of influence) vertical hydraulic gradients in previous years are greater.

3.2.5 Calculations for Basis of Hydraulic Capture

To verify the interpretation of field data (i.e. potentiometric surface maps), flow calculations were also completed to evaluate the extent of capture and provide an additional line of evidence. As outlined in the U.S. EPA guidance (U.S. EPA 2008), the simplest and most commonly applied horizontal capture zone calculation is the estimated flow rate calculation. Through application of Darcy's law, this calculation provides an estimated groundwater flux moving through the cross-sectional area of the target capture zone such that a pumping rate required to capture this flux can be determined. The estimated groundwater flux/required pumping rate can then be compared to the actual pumping rates measured in the field to assess whether or not the system is pumping at a rate sufficient to contain the target capture zone.

Simplified assumptions for this calculation include the following:

- Homogeneous, isotropic aquifer of infinite extent
- Confined aquifer, uniform aquifer thickness
- Fully penetrating recovery well(s)
- Uniform regional horizontal hydraulic gradient
- Steady-state flow
- Negligible vertical gradient
- Net recharge is accounted for in the regional hydraulic gradient
- No other sources of water to the recovery well (e.g., flux from rivers or from other aquifers), except as represented by the "factor" in the estimated flow rate calculation

The required pumping rate/groundwater flux is calculated using the following equation:

$Q = K*i*(b*w)*factor$

where:

Q is the volumetric recovery rate or groundwater flux (cubic feet/day [ft^3/day])

K is the hydraulic conductivity (ft/day)

i is the regional hydraulic gradient (ft/ft)

b is the saturated thickness (ft)

w is the plume width (ft)

The *factor* term is intended to account for other contributions to the pumping well such as flux from a river or induced vertical flow from other stratigraphic units. The assumed value for this term ranges from 1.5 to 2.0 (U.S. EPA 2008).

As noted in the U.S. EPA guidance document, this calculation requires an estimate of the regional hydraulic gradient, without the influence of pumping. Because regional hydraulic gradients often change with time, U.S. EPA (2008) suggests that, in some cases, water-level data obtained cross-gradient or even upgradient and collected during the remedy implementation may be more appropriate than pre-remedy groundwater level data for calculating regional hydraulic gradient. As such, the average horizontal hydraulic gradient, *i*, for the lower aquifer upgradient of DN-13 over the previous 5 years (2014 through 2018) averaged approximately 5.0×10^{-4} ft/ft.

As previously noted, the hydraulic conductivity, *K*, for the lower aquifer ranges from approximately 260 to 440 ft/day and the width of the target capture zone, *w*, in the lower aquifer is conservatively estimated to be approximately 2,950 ft. The estimated saturated thickness (and, consequently, the impacted thickness), *b*, of the lower aquifer is approximately 85 ft.

Using the parameter values listed above, the groundwater flux/required pumping rate was calculated for the Site and shown in the table below.

Condition	Hydraulic Conductivity (ft/day)	Hydraulic Gradient (ft/ft)	Saturated Thickness (ft)	Lower Aquifer Plume Width (ft)	Factor	Groundwater Flux/Pumping Rate (MGD/gpm)
2019 Minimum	260	5.0×10^{-4}	85	2,950	2	0.49/339
2019 Maximum (Conservative)	440	5.0×10^{-4}	85	2,950	2	0.83/573

Note that a maximum *factor* of 2 was applied in both cases to provide a realistic range in groundwater flux. For the given range in hydraulic conductivity values, the minimum and maximum groundwater flux through the target capture zone are estimated to be approximately 0.49 and 0.83 MGD (339 and 573 gpm), respectively. Recall that the average period (daily) extraction rate for DN-13 for 2019 was calculated to be 1.08 MGD (750 gpm). Compared to the estimated DN-13 groundwater flux/required pumping rates under both hydraulic conductivity conditions, the actual period extraction rates for 2019 exceed the maximum (conservative) groundwater flux estimate. Therefore, even after incorporating an overly conservative set of parameters and applying a maximum value for the *factor*, the results of this

calculation suggest that the current operation rate of DN-13 is sufficient to capture the target capture zone.

It is important to note that this mathematical model does not and cannot account for aquifer heterogeneities (e.g., changes in transmissivity) or system complexities (e.g., boundary effects, recharge, off-site sources, and off-site pumping). Therefore, these results represent a very simplified and idealized depiction of the actual groundwater flux through the aquifer.

3.2.6 Concentration Trends

Because plume migration generally follows groundwater flow towards pumping well DN-13, chlorinated VOC concentration trends were statistically analyzed for three monitoring wells located cross-gradient of DN-13 (GM-9, GM-15, and GM-20D). The goal of this trend analysis was to determine if site-specific VOC concentrations were increasing, decreasing, or stable to provide an additional line of evidence for DN-13 capture. The capture zone statistics are included as **Appendix G**.

The data statistically analyzed from three were chosen based on two criteria: having a sufficient number of data points to allow for statistical testing and for their location relative to DN-13. It was also of interest to examine the period beginning in July 2008, when Arcadis assumed control of the operation and maintenance at the extraction well.

The statistical tests were performed for the total concentration of detected site-specific VOCs. The site-specific VOCs that were detected in the three wells at any time from 1999 to 2019 included 1,1,1-TCA, 1,1-DCA, cis-1,2-DCE, PCE, trans-1,2-DCE, TCE, and vinyl chloride. The detected concentrations of the VOCs were totaled and are presented in **Table G-1**. Field duplicates were not included. J-flagged concentrations were taken to be quantitative for the purposes of this statistical evaluation. Non-detections were treated as zeroes in the summation.

Trends in groundwater quality were evaluated using both the Mann-Kendall test for trends and the Sen's Slope Estimator. The coefficient of variation was also used as a measure of stability of groundwater VOC concentrations. The purpose of these tests was to identify statistically significant trends in the concentrations of VOCs. Statistical methods were employed following Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities - Unified Guidance, provided by the U.S. EPA (U.S. EPA, 2009; Unified Guidance).

The Mann-Kendall trend test is a non-parametric test for linear trends based upon the concept that a series of data points without a trend should fluctuate randomly around a constant mean. The test is non-parametric because there is no requirement that the data follow any specific underlying distribution. If an increasing trend were to exist, one would expect an earlier point to have a lower value than a later point. The converse would be true if a decreasing trend were present. A Mann-Kendall statistic *S* is computed by comparing each pair of data points in a data set and assigning a value of +1 or -1 if the earlier data point is less than the later data point or greater than the later one, respectively. If the two data points are equal, the pair is assigned a zero. The values assigned to the pairs are summed. If the total is positive, it implies that the majority of the differences between points are positive, indicating a positive trend. Likewise, a negative sum indicates a decreasing trend. A value at or near zero indicates that the differences are roughly equal, implying that there is no trend. A critical value of *S* is determined based on the number of points in the data set and the level of significance (α) of the test. If the Mann-Kendall

statistic *S* exceeds the critical *S*, then an upward trend is statistically significant. Conversely, if the Mann-Kendall *S* is negative and its absolute value is greater than the critical *S*, then there is a statistically significant downward trend. An alpha of 0.05 was used with 0.025 significance on each of two tails, when the data sets analyzed had 10 or more members. For data sets with eight members, an alpha of 0.10 was used with 0.05 significance on each of two tails.

Sample results that were reported less than the laboratory reporting limit (RL) were replaced by a common value less than the minimum detected value, so that any pair of tied values (i.e., pair of non-detects) is simply given a score of 0 in the calculation of the Mann-Kendall statistics *S*. The common value was selected according to the following hierarchy:

1. Half of the minimum RL in the dataset
2. If half of the minimum RL was greater than the minimum detected value in the dataset, then half of the minimum detected value was used.

Details concerning this test and how to conduct it can be found in Section 17.3.2 of the Unified Guidance. The statistics for the Mann-Kendall test are implemented in Microsoft Excel based on U.S. EPA (2009) guidance.

The magnitude of the trend can be evaluated using Sen's slope estimator. The Sen's slope estimator, sometimes referred to as the Theil-Sen line (Helsel and Hirsch, 2002), is a non-parametric method for estimating the slope of time-series data (U.S. EPA, 2006). The method was first introduced by Sen in 1968 (Sen, 1968). The approach involves computing slopes for each point compared to every successive point, and then using the median of these slopes as an estimate of overall slope (U.S. EPA, 2006). Sen's slope estimator is robust to outliers, data sets with a limited number of non-detects (i.e., values less than sample reporting limits), and datasets with missing values (Gibbons, 1994; U.S. EPA, 2006). In fact, nonparametric methods such as Sen's slope estimator often perform as well or better than parametric methods and have the added benefit of avoiding pitfalls common to parametric regression methods, which can include violating assumptions of normality or failure to address leverage points that can have a substantial effect on the results (Helsel and Hirsch, 2002). For the Sens' trend analysis, values below the reporting limit were treated in the same manner as done for the Mann-Kendall analysis as per U.S. EPA (2009). A 95% confidence level ($\alpha = 0.05$ significance level) was used to test the null hypothesis that the slope is not significantly different from zero (no trend) for the Sen's slope estimation. The U.S. EPA (2009) recommends that at least four and preferably eight samples be collected in order to perform Sen's slope estimator. For the Sens' trend analysis, values below the reporting limit were treated in the same manner as done for the Mann-Kendall analysis as per U.S. EPA (2009).

For each data set, the coefficient of variation index was computed by dividing the standard deviation by the arithmetic mean of the data. If no statistically significant trend could be identified by the Mann-Kendall test and if the coefficient of variation was less than or equal to 1.0, then the data set was considered to be "stable." If no trend was identified and the coefficient of variation exceeded 1.0, then the analysis could only conclude that there was "no trend."

The results of the statistical tests are presented in **Table G-2** of **Appendix G**. Time series plots for each dataset along with the results from the Mann-Kendall and Sen's slope estimator trend tests are presented in **Figures G-1** through **G-6**. When the full data set was analyzed, no statistically significant trend was identified by the Mann-Kendall test for GM-9 or GM-15. Because the coefficient of variation was less than

1.0 for both monitoring wells, the chlorinated VOC concentration data were determined to be stable. For GM-20D, a statistically significant decreasing trend was observed. The three monitoring well data sets were tested using Sen's Slope Estimator as a second line of evidence. In all three cases, Sen's Slope Estimator confirmed the results obtained using the Mann-Kendall test.

For the post-July 2008 dataset (i.e., the time during which Arcadis was in control of the DN-13 extraction well flow rate), a statistically significant decreasing trend was identified with the Mann-Kendall test and confirmed with the Sen's Slope Estimator test for trends in GM-9 and GM-20D.

An increasing trend was identified in GM-15 based on the results from the Mann-Kendall and Sen's slope estimator trend tests using the post-July 2008 dataset. Total VOC concentrations at GM-15 ranged from 6.9 µg/L to 11 µg/L from 1999 to 2014. In November 2015 and August 2016, the total VOC concentrations increased to 17.3 µg/L and 18.0 µg/L, respectively, but decreased slightly in August 2017 to 16.9 µg/L and again in July 2018 to 15.5 µg/L. In July 2019, the concentration increased to 18.8 µg/L (the maximum concentration observed). Upon review of the historical data (**Appendix E**), it should be noted that the increasing total site-specific VOC concentrations are attributable to increasing daughter product concentrations, specifically cis-1,2-DCE. The concentrations of TCE (parent product) do not appear to be increasing; rather, the TCE data have remained relatively consistent. Consequently, these data suggest effective capture.

3.2.7 Interpreted Capture

The lines of evidence evaluated indicate that the current operation of DN-13 in 2019 is providing sufficient capture within the lower aquifer to control and prevent further migration of site-specific VOCs. The lines of evidence investigated as part of this analysis and their associated conclusions can be summarized as follows:

1. Interpret Groundwater Levels.
    a. Potentiometric Surface Map – The lower aquifer groundwater elevation data indicate that groundwater flows from the northeast to the southwest towards pumping well DN-13 and that the inferred capture zone encompasses the target capture zone.
    b. Horizontal Hydraulic Gradients – The horizontal hydraulic gradient evaluation indicates that DN-13 is providing effective capture in the downgradient region of the lower aquifer.
    c. Vertical Hydraulic Gradients – The vertical hydraulic gradients calculated for monitoring well pairs in the vicinity of DN-13 indicate an overall downward (negative) vertical hydraulic gradient from the upper to the lower aquifer.
2. Groundwater Flux Calculation – The groundwater flux calculations, which are based on conservative parameter values, indicate that the 2019 average operating flow rate at DN-13 was sufficient to capture the groundwater flux of the total site-specific VOC groundwater plume moving through the target capture zone.
3. Evaluate Groundwater Concentration Trends – Results from the total chlorinated VOC trend analysis and data review show that site-specific VOC concentrations in the lower aquifer in the vicinity of DN-13 are decreasing, stable, or potentially attributable to natural attenuation (e.g., increasing concentrations of daughter products), thereby indicating effective plume capture.

Based on these multiple lines of evidence, an interpreted capture zone was delineated and shows containment of the target capture zone on **Figure 20**. The results of this updated analysis are consistent with previous analyses and the lines of evidence suggest that sufficient hydraulic capture within the lower aquifer at the Site has been achieved.

3.3 Phase I DGR™ Performance Results

Data collected from the system (flow rates, levels, and influent/mid-stream sampling) and area groundwater monitoring (sampling and groundwater levels) were completed. Overall, the Phase I DGR™ system is operating as designed. System operational charts for 2019 are presented in **Appendix H** and include:

- Figure H-1: Extraction wells (EW-1, EW-2, and EW-3) flow rate and specific capacity in gpm/ft (flow rate divided by drawdown).
- Figure H-2: Injection wells (IW-1, IW-2, IW-3, and IW-4) flow rate and injectability in gpm/ft (flow rate divided by mounding).
- Figure H-3: Extraction wells (EW-1, EW-2, and EW-3) hydrograph.
- Figure H-4: Injection wells (IW-1, IW-2, IW-3, and IW-4) hydrograph.

The baseline groundwater quality understanding prior to operation is described in **Section 2.5.3**. The target design Phase 1 DGR™ system total extraction flow rate was 300 gpm (100 gpm from each of the three extraction wells EW-1, EW-2, EW-3) (**Figure 3**). The average total extraction flow rate for the fourth quarter of 2019 was approximately 260 gpm that includes approximately 4 days of downtime due to periodic maintenance activities (Figure H-1). Extraction wells EW-1 and EW-2 are performing as expected with regards to specific capacity. The drawdown at extraction well EW-3 increased in November 2019, and the flow rate was reduced from approximately 100 gpm to 75 gpm to compensate for the decreased performance. Evaluation of the need for corrective actions to increase the flow rate at extraction well EW-3 is on-going. The upper aquifer characteristics in the area of extraction well EW-3 exhibit increased percentages of silt and fine sand compared to extraction wells EW-1 and EW-2. The increased fines appear to be the primary component affecting the initial EW-3 extraction performance results. A hydrograph for the extraction wells is provided as Figure H-2.

Water-levels in the injection wells (IW-1 through IW-4) indicate satisfactory injectability with a decrease in performance at IW-4 in December 2019 (Figure H-3). The same upper aquifer characteristics are present at IW-4 as with EW-3 to include reduced saturated thickness due to a shallower occurrence of the regional clay till. A hydrograph for the injection wells is provided as Figure H-4. Localized mounding and water-levels just downgradient of the injections is monitored at GM-63 and indicates little to no mounding influence.

Groundwater levels collected at monitoring wells within the upper aquifer in the area of the Phase I DGR™ system will be used to assess the operational hydraulic influence. Pressure transducers were installed in 10 wells (GM-45, HR-16, HR-17, RMW-91, RMW-92, W-2-S, GM-34, WEST, GM-63, and GM-2 – **Figure 3**) and all the system wells (EW-1 through EW-3, IW-1 through IW-4). Periodic manual groundwater level measurements were taken at 32 wells (EW-1 through EW-3, IW-1 through IW-4, HR-16, HR-17, GM-2, GM-6, GM-8, GM-16 through GM-18, GM-19S, GM-47 through GM-52, GM-63, GM-64,

RMW-91 through RMW-94, RMW-98 through RMW-102, W-2-S, W-3-S, W-4-S, WSU-23, and WEST). Groundwater level data will continue to be collected throughout 2020 on a quarterly basis. Evaluation of the data collected is on-going and will be reported in forthcoming Quarterly Progress Reports and Groundwater Monitoring Reports.

4 CORRECTIVE ACTION COMPLETION STRATEGY

4.1 Effectiveness of Interim Measure Activities

4.1.1 Background and Objectives

The original Corrective Measures Objectives (CMOs) were provided in the 2012 CMP (Arcadis, Inc. 2012a). The updated draft CMOs to address site-specific VOCs in groundwater were proposed in the draft CMP Addendum submitted to the U.S. EPA in February 2020 and are summarized below.

The CMOs for the protection of human health for the upper aquifer groundwater are as follows:

1. Establish and maintain the Groundwater Environmental Indicator (i.e., groundwater migration under control – CA750)
2. Prevent exposure to concentrations of site-specific VOCs in on-site and off-site groundwater exceeding the MCLs and VISLs
3. Demonstrate the site-specific off-site VOC plume is delineated and stable and achieves the Groundwater Environmental Indicator
4. Initiate and continue source area treatment in the former PSA
5. Prevent unacceptable vapor intrusion exposure until concentrations of site-specific VOCs in groundwater are below the industrial VISLs for groundwater on and off-site
6. Attain concentrations of site-specific VOCs in the off-site groundwater plume to below MCLs/residential VISLs

The CMOs for the protection of human health for the lower aquifer are as follows:

1. Prevent on-site and off-site drinking water and process water exposure to concentrations of site-specific VOCs exceeding MCLs
2. Demonstrate concentration reduction in site-specific VOCs beneath the source area
3. Demonstrate the site-specific VOC plume is delineated, stable, and outside of drinking water well-fields, and achieves the Groundwater Environmental Indicator
4. Attain concentrations of site-specific VOCs in groundwater below MCLs at the property boundary and throughout the off-site plume

The groundwater CMOs above and the proposed final remedy are further detailed in the draft CMP Addendum submitted to the U.S. EPA in February 2020.

4.1.2 Results

Current site-specific VOC groundwater distribution within the upper aquifer above MCLs is migrating downgradient (southwest) beyond the property boundary west of Dryden Road. Groundwater reducing conditions induced by operation of in-situ reactive zones continue to provide effective treatment within the former Oil House area and downgradient east of Dryden Road. Recent implementation of Phase I DGR™

shows satisfactory performance with the primary objective to improve groundwater quality downgradient within the Riverview Plat neighborhood within 5-years. The system and groundwater quality improvements will be monitored for overall performance in 2020. For the lower aquifer, extraction well DN-13, through several lines of evidence, indicates sufficient capture exists to mitigate and control the migration of site-specific VOCs.

5 CONCLUSIONS AND RECOMMENDATIONS

This groundwater monitoring report presents the groundwater monitoring activities completed in 2019 at the RACER Trust Moraine Facilities located in Moraine, Ohio. These activities were completed to meet the five objectives presented in **Section 1.2**. Compliance with these objectives is presented for the off-site groundwater monitoring activities, interim measures, closed lagoons, and on-going groundwater monitoring in the following sections.

5.1 Off-Site Groundwater Monitoring

Groundwater samples were collected from four upper aquifer monitoring wells (RMW-95, RMW-96, RMW-97, and GM-80) screened at the water-table just upgradient of the Miami Shores neighborhood. The groundwater data were screened against the applicable VISLs (**Table 10**). The groundwater analytical results that represent conditions closest to the receptor (i.e., residential properties) did not exceed the VISLs. Results from this screening assessment indicate that groundwater concentrations of site-specific VOCs do not present an unacceptable vapor intrusion risk in the Miami Shores neighborhood.

As detailed above, Montgomery County owned piezometers BA-5S and BA-8S were sampled at the request of Montgomery County. Site-specific VOCs were not detected at concentrations above the respective reporting limits (**Table 3**). In addition, these samples were analyzed for PFAS with non-detects in the groundwater samples or with detected concentrations below the applicable U.S. EPA Health Advisory Level for PFAS.

5.2 Interim Measures Performance

The approach for RACER Trust in achieving its corrective action goals for the former Moraine Facilities is based on a combination of interim measures (in-situ treatment, hydraulic control, and DGR™) designed to reduce existing plume concentrations thereby achieving plume reduction and migration control. Concentrations in upper aquifer monitoring wells immediately downgradient of the Site to the southwest, as well as concentrations in lower aquifer wells off-site remain above MCLs. Therefore, active interim measures to include a final proposed site-wide remedy are still required to achieve the CMOs.

5.2.1 In-Situ Treatment

Groundwater quality monitoring at and downgradient of the reactive zones indicates that this in-situ treatment program has been effective at reducing chlorinated VOC concentrations in groundwater via anaerobic reductive dechlorination. As observed during the 2019 monitoring, the upper aquifer conditions in the areas downgradient of the in-situ reactive zones have been converted to strongly reducing conditions through the introduction of a carbon source, as evidenced by the presence of methane at concentrations significantly above baseline data and further supported qualitatively with field parameter data (e.g., low dissolved oxygen and oxidation-reduction potential). Further, the VOC results indicate that the target compounds (PCE and TCE) have been effectively reduced to daughter products (cis-1,2-DCE and vinyl chloride) and ultimately to ethene and ethane.

In general, the process of ERD has been successful in achieving reduction of chlorinated VOC concentrations downgradient of the source area. Previously, TOC data collected from the active IRZs at

the site has indicated that an injection frequency of once every 6 to 13 months may be appropriate to sustain appropriate substrate concentrations to support ongoing reductive dechlorination. However, recent modifications to the overall remedial strategy in 2019, injections have been suspended on an interim basis to prepare groundwater conditions for the new treatment approach at Phase I DGR™. This suspension will allow for: a) further assessment of TOC longevity within the site IRZs; b) initiation of redox restoration process that can support burn out of the active IRZs and oxidation of reduced metals (e.g., iron and manganese) that may complicate ex-situ treatment; and c) an evaluation of residual VOC concentrations in key performance monitoring wells following cessation of the injection activities. It should be noted that the interim suspension of the IRZ injections may be modified based on changes in VOC concentrations (i.e., increases) that may prompt continuation of injection activities.

The 2020 IRZ performance monitoring program will be similar to the 2019 program. The frequency of monitoring events will be on a semi-annual basis. The data will be reviewed semi-annually to determine if there is a significant rebound in VOC concentrations to the extent that the conceptual design of the diffuse groundwater plume treatment system would significantly change without the interim IRZ program. If concentrations increase to the extent that changes to the remedial design for the diffuse plume become likely, the IRZ program will resume. If the overall changes to the site-specific VOC data indicate an immaterial effect on the diffuse groundwater plume system design, the IRZ program will remain suspended. IRZ performance monitoring activities, conclusions, and recommendations will be summarized in the Quarterly Progress Reports and Groundwater Monitoring Reports.

5.2.2 Hydraulic Capture

Groundwater elevation monitoring, horizontal and vertical hydraulic gradients, groundwater flux calculations, and lower aquifer chlorinated VOC concentration trends indicate that the interim measure DN-13 continues to be effective at maintaining capture of the target capture zone in the lower aquifer. Based on the effective performance of the pumping program during 2019, the current pumping program at DN-13 will continue to be implemented and evaluated in 2020. With the robust capture analyses that followed U.S. EPA 2008 guidance over the past 8 years, the capture hydraulics in relation to DN-13 operation have been established. It is recommended that the capture analysis and evaluation of DN-13 data in relative to hydraulic control be reduced to every 5 years with continued reporting on operation and maintenance to maintain a flow rate for capture. Specifically removing the need to evaluate the hydraulics in relation to horizontal and vertical gradients, inferred capture zone, and calculations. It is recommended to maintain collection of groundwater levels and annual monitoring of local lower aquifer site-specific VOC concentrations to confirm overall conditions.

5.2.3 Phase 1 DGR™

Preliminary data collected in 2019 indicates that the system is operating as designed with expected operation and maintenance activities to maintain performance. In 2020, performance monitoring for the Phase I DGR™ will continue quarterly with the potential for reduction in monitoring to semi-annual during the second half of the year.

5.3 Post-Closure Monitoring

As proposed in the Site-Wide Groundwater Monitoring Plan (Arcadis G&M, Inc. 2002), post-closure monitoring data collected at the closed North and South Settling Lagoons were evaluated to determine if these closed units may be contributing site-specific VOCs to groundwater.

This evaluation of post-closure monitoring data indicate that these units do not appear to be affecting groundwater quality. Based on the results from the 2019 monitoring, no changes in the monitoring program for the closed lagoons are proposed.

5.4 2020 Groundwater Monitoring Program

Based on the on-going remedial design tasks and expected remedy implementation, it is proposed that the 2020 groundwater monitoring program remain mostly consistent with the sampling program for 2019. This includes monitoring associated with the IRZs, DN-13, Phase I DGR™, and the closed North and South Settling Lagoons. The proposed groundwater monitoring program for 2020 is provided in **Table 11**.

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TABLES

Table 1
Groundwater Monitoring Program for 2019
RACER Trust Moraine Facilities
Moraine, Ohio

ARCADIS Design & Consultancy for natural and built assets

Annual Groundwater Sampling

Upper aquifer monitoring wells analyzed for the site-specific list of VOCs(1) and field parameters(2). Biogeochemical parameters(3) including TOC(4) were analyzed at select wells identified below:

W-2-N	W-3-S	GM-21(3)	GM-48	GM-80	RMW-97
W-3-N	W-4-S	GM-23(3)	GM-49	RMW-91	RMW-98
W-4-N	GM-2(3)	GM-27(3)	GM-50	RMW-92	RMW-99
HR-4	GM-6(3)	GM-28R(3)	GM-51	RMW-93	RMW-100
HR-16	GM-8(3)	GM-29(3)	GM-52	RMW-94	RMW-101
HR-17	GM-16	GM-32(4)	GM-63	RMW-95	RMW-102
W-2-S	GM-19S (3)	GM-47	GM-64	RMW-96	WSU-23

Upper aquifer Montgomery County piezometers analyzed for the site-specific list of VOCs(1), field parameters(2), and PFAS:

BA-5S	BA-8S

Lower aquifer monitoring wells sampled for the site-specific list of VOCs(1) and field parameters(2):

DN-13	GM-15
GM-9	GM-20D

Analytical Methods

Parameter	Analytical Method
Site-specific list of VOCs	SW846 8260B
PFAS	EPA 537M
Manganese, total and dissolved	SW846 6010B
Iron, total and dissolved	SW846 6010B
Sulfate	MCAWW 300.0
Sulfide, total	SM 4500 S2 F-2000
Total organic carbon	SW846 9060
Chlorides	SW846 9251
Ethane, ethene, methane	AM20GAX

NOTES:

1 – Site-specific list of VOCs for 2019 includes: benzene, 1,1-dichloroethane, 1,1-dichloroethene, cis-1,2-dichloroethene, trans-1,2-dichloroethene, ethylbenzene, tetrachloroethene, toluene, 1,1,1-trichloroethane, trichloroethene, vinyl chloride, and xylenes.

2 – Field parameters include: pH, specific conductivity, dissolved oxygen, oxidation reduction potential, and temperature.

3 – Biogeochemical parameters include: manganese (total and dissolved), iron (total and dissolved), sulfate, sulfide, chlorides, ethane, ethene, and methane.

4 – Upper aquifer monitoring well GM-32 was also sampled for total organic carbon.

Table 2
Carbon Source Solution Introduction Volumes for 2019
RACER Trust Moraine Facilities
Moraine, Ohio

Location[1]	Injection Well	Injection Event #176[2] Volume (gallons)[3]	Average Flow Rate (gallons per minute)
Reactive Zone 3			
	RZ-3A	1,600	18.89
	RZ-3B	1,600	23.03
	RZ-3C	1,600	22.56
	RZ-3D*	800	8.51
	RZ-3E*	800	10.52
	RZ-3F	1,600	12.57
	RZ-3G*	800	7.01
	RZ-3H	1,600	21.18
	RZ-3I	1,600	14.18
	RZ-3J	1,600	21.11
	RZ-3K	1,600	20.53
	RZ-3L	1,600	28.08
	RZ-3M	1,600	29.17
	RZ-3N	1,600	30.81
	RZ-3O	1,600	26.69
	RZ-3P	1,600	21.43
	RZ-3Q	1,600	29.10
	RZ-3R	1,600	31.38
	RZ-3S	1,600	21.92
	RZ-3T	1,600	21.42
	RZ-3U	1,600	26.66
	RZ-3V	1,600	23.88
	RZ-3W	1,600	24.33
	RZ-3X	1,600	26.23
	RZ-3Y	1,600	25.40
	RZ-3Z	1,600	24.62
	RZ-3AA	1,600	24.24
	RZ-3BB	1,600	22.87
	RZ-3CC	1,600	24.62
	RZ-3DD	1,600	26.66
Site-Wide Total		**45,600**	**NA**

Notes:
***** Injection event not completed due to molasses solution daylighting.

(1) Per the 2019 scope of work presented in the 2019 Budget Authorization Package, Arcadis will only introduce molasses solution into wells within RZ-3 West.

(2) Injection Event #176 was completed March 18-22nd, and 25-28th of 2019.

(3) Carbon source introduced into each well is a 50:1 solution (potable water to molasses).

Table 3
Summary of Groundwater VOC Analytical Results from Upper/Lower Aquifer Monitoring Wells in 2019
RACER Trust Moraine Facilities
Moraine, Ohio

			Downgradient Reactive Zone Performance Monitorng Wells									
	Units	U.S. EPA MCL[1]	GM-2 7/12/2019 Upper Aquifer	GM-6 7/11/2019 Upper Aquifer	GM-8 7/11/2019 Upper Aquifer	GM-19S 7/12/2019 Upper Aquifer	GM-21 7/12/2019 Upper Aquifer	GM-23 7/12/2019 Upper Aquifer	GM-27 7/12/2019 Upper Aquifer	GM-28R 7/12/2019 Upper Aquifer	GM-29 7/12/2019 Upper Aquifer	GM-32 7/11/2019 Upper Aquifer
Site-Specific Volatile Organic Compounds												
1,1,1-Trichloroethane	ug/L	200	0.33 J	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 40 U	< 1.0 U	< 1.0 U	8.4 J	< 1.0 U
1,1-Dichloroethane	ug/L		< 1.0 U	0.23 J	0.40 J	1.9	6.3	< 40 U	0.54 J	< 1.0 U	9.2 J	0.45 J
1,1-Dichloroethene	ug/L	7	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 40 U	< 1.0 U	< 1.0 U	< 13 U	< 1.0 U
Benzene	ug/L	5	< 1.0 U	< 1.0 U	1.6	< 1.0 U	< 1.0 U	< 40 U	< 1.0 U	< 1.0 U	< 13 U	< 1.0 U
cis-1,2-Dichloroethene	ug/L	70	0.33 J	0.38 J	0.27 J	32	10	**550**	9.0	1.1	**380**	0.34 J
Ethylbenzene	ug/L	700	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 40 U	< 1.0 U	< 1.0 U	< 13 U	< 1.0 U
Tetrachloroethene	ug/L	5	**28**	< 1.0 U	< 1.0 U	1.0	< 1.0 U	**22 J**	0.59 J	**13**	**11 J**	< 1.0 U
Toluene	ug/L	1,000	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 40 U	< 1.0 U	< 1.0 U	< 13 U	< 1.0 U
trans-1,2-Dichloroethene	ug/L	100	< 1.0 U	< 1.0 U	< 1.0 U	0.52 J	1.0	16 J	0.37 J	< 1.0 U	13	< 1.0 U
Trichloroethene	ug/L	5	**7.4**	< 1.0 U	< 1.0 U	2.3	2.1	**15 J**	**18**	0.35 J	**300**	< 1.0 U
Vinyl chloride	ug/L	2	< 1.0 U	0.25 J	0.25 J	**3.6**	**6.6**	**250**	0.31 J	< 1.0 U	**38**	0.26 J
Xylene (total)	ug/L	10,000	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 80 U	< 2.0 U	< 2.0 U	< 27 U	< 2.0 U
Total Site-Specific VOCs	ug/L		36	0.9	2.5	41	26	853	29	14	760	1.1

NOTES:
MCL - Maximum Contaminant Level - U.S. EPA drinking water standard.
[1] - An MCL is not listed for 1,1-dichloroethane.
The QA/QC results for 2019 data are shown in Appendix C.
< - Constituent not detected above laboratory reporting limit shown.
BOLD - Result above MCL.
ug/L - Micrograms per Liter.
B - Compound was found in the blank and sample.
J - Value is estimated.
U - Constituent not detected above laboratory reporting limit shown.

Table 3
Summary of Groundwater VOC Analytical Results from Upper/Lower Aquifer Monitoring Wells in 2019
RACER Trust Moraine Facilities
Moraine, Ohio

			Closed North Settling Lagoon Monitoring Wells				Closed South Settling Lagoon Monitoring Wells			
	Units	U.S. EPA MCL[1]	HR-4 7/9/2019 Upper Aquifer	W-2-N 7/9/2019 Upper Aquifer	W-3-N 7/9/2019 Upper Aquifer	W-4-N 7/9/2019 Upper Aquifer	HR-17 7/9/2019 Upper Aquifer	W-2-S 7/9/2019 Upper Aquifer	W-3-S 7/9/2019 Upper Aquifer	W-4-S 7/9/2019 Upper Aquifer
Site-Specific Volatile Organic Compounds										
1,1,1-Trichloroethane	ug/L	200	2.2	< 1.0 U	< 1.0 U	< 1.0 U	7.4	0.60 J	2.5	1.7
1,1-Dichloroethane	ug/L		1.7	0.19 J	< 1.0 U	7.6	1.6	0.23 J	0.83 J	1.6
1,1-Dichloroethene	ug/L	7	0.19 J	< 1.0 U	< 1.0 U	< 1.0 U	0.54 J	< 1.0 U	< 1.0 U	< 1.0 U
Benzene	ug/L	5	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
cis-1,2-Dichloroethene	ug/L	70	0.56 J	1.8	14	6.6	1.2	0.29 J	1.1	13
Ethylbenzene	ug/L	700	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Tetrachloroethene	ug/L	5	0.22 J	< 1.0 U	< 1.0 U	0.72 J	**150**	**20**	**81**	**70**
Toluene	ug/L	1,000	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
trans-1,2-Dichloroethene	ug/L	100	< 1.0 U	0.22 J	0.23 J	0.88 J	< 1.0 U	< 1.0 U	< 1.0 U	1.2
Trichloroethene	ug/L	5	0.29 J	1.1	< 1.0 U	**9.2**	1.7	2.8	**5.6**	**33**
Vinyl chloride	ug/L	2	< 1.0 U	< 1.0 U	0.81 J	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Xylene (total)	ug/L	10,000	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U
Total Site-Specific VOCs	ug/L		5.2	3.3	15	25	162	24	91	121

NOTES:
MCL - Maximum Contaminant Level - U.S. EPA drinking water standard
[1] - An MCL is not listed for 1,1-dichloroethane.
The QA/QC results for 2019 data are shown in Appendix C.
< - Constituent not detected above laboratory reporting limit shown.
BOLD - Result above MCL.
ug/L - Micrograms per Liter.
B - Compound was found in the blank and sample.
J - Value is estimated.
U - Constituent not detected above laboratory reporting limit shown.

Table 3
Summary of Groundwater VOC Analytical Results from Upper/Lower Aquifer Monitoring Wells in 2019
RACER Trust Moraine Facilities
Moraine, Ohio

			Montgomery County Piezometers		Downgradient Off-Site Monitoring Wells				Phase 1 DGR™ System Performance Monitoring Wells			
			BA-5S	BA-8S	GM-80	RMW-95	RMW-96	RMW-97	HR-16	RMW-91	RMW-92	RMW-93
			12/5/2019	12/5/2019	3/27/2019	3/27/2019	3/27/2019	3/27/2019	7/9/2019	7/11/2019	7/11/2019	7/11/2019
	Units	U.S. EPA MCL[1]	Upper Aquifer	Upper Aquifer	Upper Aquifer	Upper Aquifer	Upper Aquifer	Upper Aquifer	Upper Aquifer	Upper Aquifer	Upper Aquifer	Upper Aquifer
Site-Specific Volatile Organic Compounds												
1,1,1-Trichloroethane	ug/L	200	< 1.0 U	< 1.0 U	< 1.0 U	0.43 J	< 1.0 U	< 1.0 U	0.36 J	1.8 J	1.6	2.0 J
1,1-Dichloroethane	ug/L		< 1.0 U	< 1.0 U	< 1.0 U	0.35 J	< 1.0 U	< 1.0 U	0.75 J	2.5 J	0.55 J	0.66 J
1,1-Dichloroethene	ug/L	7	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 5.0 U	< 1.0 U	< 2.5 U
Benzene	ug/L	5	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 5.0 U	< 1.0 U	< 2.5 U
cis-1,2-Dichloroethene	ug/L	70	< 1.0 U	0.29 J	0.76 J	0.24 J	0.43 J	< 1.0 U	0.62 J	25	0.83 J	1.7 J
Ethylbenzene	ug/L	700	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 5.0 U	< 1.0 U	< 2.5 U
Tetrachloroethene	ug/L	5	< 1.0 U	< 1.0 U	**15**	2.6	2.0	2.8	0.17 J	**130**	**57**	**90**
Toluene	ug/L	1,000	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 5.0 U	< 1.0 U	< 2.5 U
trans-1,2-Dichloroethene	ug/L	100	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	0.21 J	2.3 J	< 1.0 U	< 2.5 U
Trichloroethene	ug/L	5	0.39 J	< 1.0 U	3.6 B	0.63 JB	0.44 JB	0.26 JB	2.9	**62**	1.1	**7.2**
Vinyl chloride	ug/L	2	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 5.0 U	< 1.0 U	< 2.5 U
Xylene (total)	ug/L	10,000	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 10 U	< 2.0 U	< 5.0 U
Total Site-Specific VOCs	ug/L		0.4	0.3	19	4.3	2.9	3.1	5	224	61	102

NOTES:
MCL - Maximum Contaminant Level - U.S. EPA drinking water standard
[1] - An MCL is not listed for 1,1-dichloroethane.
The QA/QC results for 2019 data are shown in Appendix C.
< - Constituent not detected above laboratory reporting limit shown.
BOLD - Result above MCL.
ug/L - Micrograms per Liter.
B - Compound was found in the blank and sample.
J - Value is estimated.
U - Constituent not detected above laboratory reporting limit shown.

Table 3
Summary of Groundwater VOC Analytical Results from Upper/Lower Aquifer Monitoring Wells in 2019
RACER Trust Moraine Facilities
Moraine, Ohio

			Phase 1 DGR™ System Performance Monitoring Wells									
	Units	U.S. EPA MCL[1]	RMW-94 7/11/2019 Upper Aquifer	GM-16 7/8/2019 Upper Aquifer	GM-47 7/10/2019 Upper Aquifer	GM-48 7/10/2019 Upper Aquifer	GM-49 7/10/2019 Upper Aquifer	GM-50 7/10/2019 Upper Aquifer	GM-51 7/10/2019 Upper Aquifer	GM-52 7/10/2019 Upper Aquifer	GM-63 7/10/2019 Upper Aquifer	GM-64 7/10/2019 Upper Aquifer
Site-Specific Volatile Organic Compounds												
1,1,1-Trichloroethane	ug/L	200	1.2 J	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	0.65 J
1,1-Dichloroethane	ug/L		0.39 J	0.54 J	5.2	0.19 J	0.21 J	7.4	1.9	< 1.0 U	1.6	2.5
1,1-Dichloroethene	ug/L	7	< 1.7 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Benzene	ug/L	5	< 1.7 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
cis-1,2-Dichloroethene	ug/L	70	0.40 J	5.6	29	0.89 J	< 1.0 U	7.4	6.1	< 1.0 U	2.6	40
Ethylbenzene	ug/L	700	< 1.7 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Tetrachloroethene	ug/L	5	**58**	**13**	**40**	**28**	1.2	2.2	**44**	**15**	**12**	**15**
Toluene	ug/L	1,000	< 1.7 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
trans-1,2-Dichloroethene	ug/L	100	< 1.7 U	< 1.0 U	0.81 J	< 1.0 U	< 1.0 U	0.20 J	0.22 J	< 1.0 U	< 1.0 U	0.87 J
Trichloroethene	ug/L	5	0.71 J	3.0	**9.3**	1.3	2.4	0.39 J	5.0	0.83 J	3.7	**31**
Vinyl chloride	ug/L	2	< 1.7 U	0.45 J	0.60 J	< 1.0 U	< 1.0 U	1.8	< 1.0 U	< 1.0 U	0.31 J	1.3
Xylene (total)	ug/L	10,000	< 3.3 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U
Total Site-Specific VOCs	ug/L		61	23	85	30	3.8	19	57	16	20	91

NOTES:
MCL - Maximum Contaminant Level - U.S. EPA drinking water standard
[1] - An MCL is not listed for 1,1-dichloroethane.
The QA/QC results for 2019 data are shown in Appendix C.
< - Constituent not detected above laboratory reporting limit shown.
BOLD - Result above MCL.
ug/L - Micrograms per Liter.
B - Compound was found in the blank and sample.
J - Value is estimated.
U - Constituent not detected above laboratory reporting limit shown.

Table 3
Summary of Groundwater VOC Analytical Results from Upper/Lower Aquifer Monitoring Wells in 2019
RACER Trust Moraine Facilities
Moraine, Ohio

			Phase 1 DGR™ System Performance Monitoring Wells						DN-13 Performance Monitoring Wells			
	Units	U.S. EPA MCL[1]	RMW-98 7/10/2019 Upper Aquifer	RMW-99 7/10/2019 Upper Aquifer	RMW-100 7/8/2019 Upper Aquifer	RMW-101 7/8/2019 Upper Aquifer	RMW-102 7/8/2019 Upper Aquifer	WSU-23 7/10/2019 Upper Aquifer	DN-13 7/11/2019 Lower Aquifer	GM-9 7/11/2019 Lower Aquifer	GM-15 7/8/2019 Lower Aquifer	GM-20D 7/11/2019 Lower Aquifer
Site-Specific Volatile Organic Compounds												
1,1,1-Trichloroethane	ug/L	200	1.2	0.77 J	< 1.0 U	< 1.0 U	< 1.0 U	1.7	0.66 J	0.51 J	< 1.0 U	< 1.0 U
1,1-Dichloroethane	ug/L		1.6	2.1	0.82 J	1.3	< 1.0 U	0.86 J	1.0	< 1.0 U	2.3	< 1.0 U
1,1-Dichloroethene	ug/L	7	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Benzene	ug/L	5	< 1.0 U	< 1.0 U	< 1.0 U	0.13 J	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
cis-1,2-Dichloroethene	ug/L	70	6.8	2.9	1.8	6.7	< 1.0 U	0.77 J	4.4	< 1.0 U	9.4	< 1.0 U
Ethylbenzene	ug/L	700	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Tetrachloroethene	ug/L	5	**35**	**35**	< 1.0 U	0.49 J	**14**	**28**	0.87 J	< 1.0 U	< 1.0 U	0.37 J
Toluene	ug/L	1,000	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
trans-1,2-Dichloroethene	ug/L	100	0.29 J	< 1.0 U	< 1.0 U	0.30 J	< 1.0 U	< 1.0 U	0.23 J	< 1.0 U	0.68 J	< 1.0 U
Trichloroethene	ug/L	5	**8.5**	2.3	< 1.0 U	1.9	0.39 J	3.7	**5.6**	**6.0**	**5.7**	0.48 J
Vinyl chloride	ug/L	2	0.27 J	0.26 J	0.50 J	0.61 J	< 1.0 U	< 1.0 U	0.30 J	< 1.0 U	0.68 J	< 1.0 U
Xylene (total)	ug/L	10,000	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U
Total Site-Specific VOCs	ug/L		54	43	3.1	11	14	35	13	6.5	19	0.9

NOTES:
MCL - Maximum Contaminant Level - U.S. EPA drinking water standard
[1] - An MCL is not listed for 1,1-dichloroethane.
The QA/QC results for 2019 data are shown in Appendix C.
< - Constituent not detected above laboratory reporting limit shown.
BOLD - Result above MCL.
ug/L - Micrograms per Liter.
B - Compound was found in the blank and sample.
J - Value is estimated.
U - Constituent not detected above laboratory reporting limit shown.

Table 4
Summary of PFAS Data in Off-Site Groundwater in 2019
RACER Trust Moraine Facilities
Moraine, Ohio

	Unit	U.S. EPA Health Advisory Level	BA-5S 12/5/2019	BA-8S 12/5/2019
Constituents				
Perfluorooctanesulfonic acid (PFOS)	ng/L	-	14	< 1.7 U
Perfluorooctanoic acid (PFOA)	ng/L	-	4.0	2.6
Combined (PFOS and PFOA)	ng/L	70	18	2.6
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	ng/L	-	< 17 U	< 17 U
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	ng/L	-	< 17 U	< 17 U
Perfluorobutanesulfonic acid (PFBS)	ng/L	-	2.5	4.3
Perfluorobutanoic acid (PFBA)	ng/L	-	4.7 B	5.8 B
Perfluorodecanesulfonic acid (PFDS)	ng/L	-	< 1.7 U	< 1.7 U
Perfluorodecanoic acid (PFDA)	ng/L	-	0.29 J	< 1.7 U
Perfluorododecanoic acid (PFDoA)	ng/L	-	< 1.7 U	< 1.7 U
Perfluoroheptanesulfonic Acid (PFHpS)	ng/L	-	< 1.7 U	< 1.7 U
Perfluoroheptanoic acid (PFHpA)	ng/L	-	0.38 J	1.4 J
Perfluorohexanoic acid (PFHxA)	ng/L	-	< 1.7 U	4.2
Perfluorohexanesulfonic acid (PFHxS)	ng/L	-	4.4 B	3.0 B
Perfluorononanesulfonic acid (PFNS)	ng/L	-	< 1.7 U	< 1.7 U
Perfluorononanoic acid (PFNA)	ng/L	-	0.97 J	< 1.7 U
Perfluorooctane Sulfonamide (FOSA)	ng/L	-	< 1.7 U	< 1.7 U
Perfluoropentanesulfonic acid (PFPeS)	ng/L	-	0.48 J	1.3 J
Perfluoropentanoic acid (PFPeA)	ng/L	-	0.68 J	3.9
Perfluorotetradecanoic acid (PFTeA)	ng/L	-	< 1.7 U	< 1.7 U
Perfluorotridecanoic Acid (PFTriA)	ng/L	-	< 1.7 U	< 1.7 U
Perfluoroundecanoic acid (PFUnA)	ng/L	-	< 1.7 U	< 1.7 U
4:2 FTS	ng/L	-	< 17 U	< 17 U
6:2 FTS	ng/L	-	< 17 U	< 17 U
8:2 FTS	ng/L	-	< 17 U	< 17 U

Notes:
ng/L - Nanograms per liter.
- Not available.
B - Compound was found in the blank and sample.
J - Result is less than the reporting limit but greater than or equal to the method detection limit and the concentration is an approximate value.
< - Constituent not detected above the laboratory reporting limit shown.
U - Indicates the analyte was analyzed for but not detected.
U.S. EPA Health Advisory - lifetime health advisory level established for drinking water

Table 5
DN-13 Monthly Effluent Monitoring for 2019
RACER Trust Moraine Facilities
Moraine, Ohio

Volatile Organic Compound[1]	Units	1/16/2019	2/4/2019	3/4/2019	4/5/2019	5/1/2019	6/3/2019	7/1/2019	8/1/2019	9/3/2019	10/2/2019	11/14/2019	12/5/2019
1,1,1-Trichloroethane	ug/L	0.35 J	0.43 J	0.39 J	0.41 J	0.38 J	0.38 J	0.43 J	0.41 J	0.37 J	0.36 J	0.36 J	0.49 J
1,1-Dichloroethane	ug/L	0.82 J	0.84 J	0.72 J	0.87 J	0.71 J	0.89 J	0.89 J	0.80 J	0.73 J	0.78 J	0.66 J	0.93 J
Benzene	ug/L	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Chloroethane	ug/L	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
cis-1,2-Dichloroethene	ug/L	3.6	3.2	3.0	3.3	2.6	3.6	3.2	3.2	3.0	3.0	3.0	3.8
Ethylbenzene	ug/L	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Tetrachloroethene	ug/L	0.74 J	0.61 J	0.74 J	0.73 J	0.59 J	0.61 J	0.73 J	0.60 J	0.60 J	0.49 J	0.60 J	0.60 J
Toluene	ug/L	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Trichloroethene	ug/L	4.0	3.9	4.1	4.0	3.3	3.7	3.9	4.1	3.8	3.4	3.8	4.7
Vinyl chloride	ug/L	< 1.0 U	< 1.0 U	0.20 J	< 1.0 U	< 1.0 U	0.28 J	0.25 J	< 1.0 U	< 1.0 U	< 1.0 U	0.21 J	0.29 J
Xylene (total)	ug/L	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U
Total VOCs	**ug/L**	**9.5**	**9.0**	**9.2**	**9.3**	**7.6**	**9.5**	**9.4**	**9.1**	**8.5**	**8.0**	**8.6**	**11**

NOTES:
[1] - Analytical method for volatile organic compounds (VOC) analysis is U.S. EPA Method 624.
< - Constituent not detected above laboratory reporting limit shown.
ug/L - Micrograms per Liter.
J - Estimated result less than reporting limit.
U - Constituent not detected above laboratory reporting limit shown.

Table 6
Groundwater Well Construction Details
RACER Trust Moraine Facilities
Moraine, Ohio

Well	Surface Elevation ft amsl	TOC Elevation ft amsl	Vertical Datum Used	Well Diameter inches	Screened Interval ft bls	Screened Interval ft bls	Screened Interval ft amsl	Screened Interval ft amsl	Borehole Depth ft bls	State Plane Coordinates Northing, y	State Plane Coordinates Easting, x	Geologic Modifiers
Upper Aquifer Wells												
W-1-N	737.61	739.02	NGVD 29	4	35	70	702.61	667.61	70	625116.3422	1483946.8992	UA:TT
W-2-N	729.68	731.68	NGVD 29	4	35	60	694.68	669.68	60	623866.0756	1483351.7627	UA
W-3-N	731.98	733.66	NGVD 29	4	32	57	699.98	674.98	57	623695.7949	1483607.4206	UA
W-4-N	729.88	731.63	NGVD 29	4	40	65	689.88	664.88	65	623651.7734	1483795.1345	UA:TT
HR-1	730.10	732.71	NGVD 29	2	47	57	683.10	673.10	57	621967.8549	1483377.9900	UA:TT
HR-2	732.62	734.75	NGVD 29	2	47	57	685.62	675.62	58	623649.4613	1484030.9239	UA:TT
HR-3	734.31	736.75	NGVD 29	2	50	60	684.31	674.31	61	623611.9924	1484238.1821	UA:TT
HR-4	740.61	742.60	NGVD 29	2	55	65	685.61	675.61	67	624581.9005	1484003.6807	UA:TT
HR-5	730.95	734.27	NGVD 29	2	44	54	686.95	676.95	59	623354.7012	1483478.7701	UA:TT
HR-6	730.18	732.66	NGVD 29	2	43	53	687.18	677.18	59	622588.7007	1483298.9418	UA:TT
HR-7	731.00	731.73	NGVD 29	2	47	57	684.00	674.00	58	623373.7436	1483168.4377	UA:TT
HR-11	740.90	743.33	NGVD 29	2	60	70	680.90	670.90	75	625682.5579	1485262.8401	UA
HR-16	724.11	726.02	NAVD 88	4	42	62	682.11	662.11	70	621167.5622	1482171.8835	UA:TT
HR-17	724.70	725.42	NAVD 88	4	27	47	697.70	677.70	56	621132.8793	1482765.5781	UA:TT
W-1-S	728.23	729.29	NGVD 29	4	25	60	703.23	668.23	60	621395.9961	1482990.4905	UA:TT
W-2-S	724.38	725.67	NAVD 88	4	30	65	694.38	659.38	65	620607.2655	1482017.2170	UA:TT
W-3-S[1]	726.20	728.16	NAVD 88	4	36	76	690.20	650.20	76	620461.1503	1482167.2361	UA
W-4-S	725.61	726.76	NAVD 88	4	30	70	695.61	655.61	70	620363.7795	1482551.3692	UA
GM-2[2]	732.89	734.76	NAVD 88	2	45	55	687.89	677.89	55	619576.6485	1483413.7313	UA
4S[2]	NM	731.36	NGVD 29	4	30	65	699.00	664.00	65	619578.3189	1483129.7015	UA
GM-6[2]	727.55	729.24	NAVD 88	2	35	45	696.00	686.00	45	619632.5634	1482916.2533	UA:TT
GM-8	732.67	734.40	NAVD 88	2	40	50	692.67	682.67	50	619866.4717	1482965.5616	UA:TT
GM-10[2]	NM	723.90	NGVD 29	2	40	50	681.00	671.00	50	618762.7050	1482667.6948	UA:TT
GM-16[2]	724.49	724.29	NAVD 88	2	48	58	678.00	668.00	58	619424.9146	1482135.0492	UA
GM-17[2]	723.07	722.79	NAVD 88	2	40	50	684.00	674.00	50	619316.6254	1482682.9181	UA
GM-18[2]	722.98	722.71	NAVD 88	2	45	55	679.00	669.00	55	619232.8332	1482506.6521	UA:TT
GM-19S[2]	727.84	729.72	NAVD 88	2	47	57	691.00	681.00	57	620331.9954	1483061.1382	UA:TT
GM-21	725.36	725.00	NGVD 29	2	45	55	680.36	670.36	55	619920.6783	1483764.4734	UA:TT
GM-22	731.84	731.63	NGVD 29	2	44	54	687.84	677.84	54	620840.5066	1484226.4408	UA:TT
GM-23[2]	NM	731.07	NGVD 29	2	24	34	674.00	664.00	34	623699.0734	1484620.0452	UA:TUT
GM-24	747.61	747.29	NAVD 88	2	58	68	689.61	679.61	70	625945.1862	1486991.6799	UA
GM-25	747.05	746.17	NGVD 29	2	48	58	699.05	689.05	58	622786.3571	1486599.7086	UA:TT
GM-26	722.29	722.29	NGVD 29	2	50	60	672.29	662.29	60	617729.9754	1482129.1606	UA
GM-27	731.03	730.57	NGVD 29	2	40	50	691.03	681.03	58	623696.6847	1484630.6938	UA:TT
GM-28[2][3]	NM	736.46	NGVD 29	2	22	32	715.00	705.00	32	623392.5301	1484436.9072	UA:TUT
GM-28R	731.70	731.08	NAVD 88	2	20	30	711.70	701.70	30.5	623340.8523	1484507.2774	UA
GM-29	731.31	731.37	NGVD 29	2	28	38	703.31	693.31	38	623534.5654	1484535.0169	UA:TUT
GM-30[2][4]	NM	734.79	NGVD 29	2	28	38	707.00	697.00	38	623876.3291	1484609.6320	UA:TUT

Table 6
Groundwater Well Construction Details
RACER Trust Moraine Facilities
Moraine, Ohio

Well	Surface Elevation ft amsl	TOC Elevation ft amsl	Vertical Datum Used	Well Diameter inches	Screened Interval ft bls	Screened Interval ft bls	Screened Interval ft amsl	Screened Interval ft amsl	Borehole Depth ft bls	State Plane Coordinates Northing, y	State Plane Coordinates Easting, x	Geologic Modifiers
Upper Aquifer Wells												
GM-31[4]	732.05	732.13	NGVD 29	2	51	61	681.05	671.05	62	621336.9494	1483965.1492	UA:TT
GM-32	732.47	732.08	NGVD 29	2	51	61	681.47	671.47	51	620114.1810	1483380.0271	UA:TT
GM-33	729.19	728.94	NAVD 88	2	48	58	681.19	671.19	58	620731.1934	1483641.4943	UA:TT
GM-34	729.95	729.27	NAVD 88	2	26	36	703.95	693.95	36	620730.0924	1483650.2951	UA:WT
GM-35	730.56	730.27	NAVD 88	2	57	67	673.56	663.56	70	620275.4483	1483275.5872	UA:TT
GM-36	731.44	731.11	NGVD 29	2	25	35	706.44	696.44	35	620383.1025	1483300.7238	UA:WT
GM-37	730.36	730.05	NGVD 29	2	46	56	684.36	674.36	56	620407.4613	1483455.9922	UA:TT
GM-38	730.31	729.88	NGVD 29	2	24	34	706.31	696.31	34	620403.1545	1483471.6717	UA:WT
GM-43	729.41	729.00	NGVD 29	2	40	50	689.41	679.41	54	622192.1557	1483441.3758	UA:TT
GM-44	729.30	728.77	NGVD 29	2	51	61	678.30	668.30	62	621686.3979	1483331.5242	UA:TT
GM-45	728.45	728.13	NAVD 88	2	50	60	678.45	668.45	60	621415.3955	1483241.9111	UA:TT
GM-46	728.13	727.79	NGVD 29	2	19.8	29.8	708.33	698.33	29.8	623393.7044	1484776.8931	UA:TUT
GM-47	726.06	725.81	NAVD 88	2	49.4	59.4	676.66	666.66	59.4	620016.5433	1482461.3001	UA:TT
GM-48	727.98	727.68	NAVD 88	2	63.2	73.2	664.78	654.78	73.2	619464.8685	1481739.2763	UA:TT
GM-49	727.22	726.99	NAVD 88	2	66.9	76.9	660.32	650.32	76.9	618612.3745	1481727.8482	UA:TT
GM-50	726.05	725.62	NAVD 88	2	29.7	39.7	696.35	686.35	39.7	620016.4003	1482458.0941	UA:WT
GM-51	727.95	727.45	NAVD 88	2	34.3	44.3	693.65	683.65	44.3	619469.2504	1481738.8331	UA:WT
GM-52	727.11	726.67	NAVD 88	2	34	44	693.11	683.11	44	618608.4894	1481726.9191	UA:WT
GM-53	730.53	730.35	NGVD 29	2	23	33	707.53	697.53	33	621184.8217	1484855.5742	UA:TT
GM-55	719.90	719.86	NGVD 29	2	25	35	694.90	684.90	35	618008.1622	1482441.5884	UA:WT
GM-57[5]	719.41	721.40	NGVD 29	2	25	35	694.41	684.41	35	617724.0893	1482132.1444	UA:WT
GM-59	731.53	731.27	NAVD 88	2	25	35	706.53	696.53	35	622767.2094	1484695.7471	UA:WT
GM-60	731.53	731.27	NAVD 88	2	42	52	689.53	679.53	52	622766.9994	1484695.8173	UA:TT
GM-62R	723.15	723.51	NAVD 88	2	50	60	NA	NA	60	618423.9572	1482812.6551	UA
GM-63	725.32	724.86	NAVD 88	2	30	40	695.32	685.32	40	620288.2393	1482671.1783	UA:WT
GM-64	725.46	725.05	NAVD 88	2	50	60	675.46	665.46	60	620289.0605	1482666.2013	UA:TT
GM-65S	723.94	723.58	NGVD 29	2	42	52	681.94	671.94	52	617392.3535	1481382.3676	UA
GM-66	733.50	733.22	NGVD 29	2	45	55	688.50	678.50	57	622780.5074	1484091.4645	UA:TT
GM-67S	732.54	732.06	NGVD 29	2	44	54	688.54	678.54	54	623050.1586	1484547.1769	UA:TT
GM-68S	732.48	732.18	NGVD 29	2	39.5	49.5	692.977	682.977	49.5	622326.0756	1484652.7126	UA:TT
GM-71	736.24	735.83	NAVD 88	2	21	31	715.24	705.24	37	622639.9705	1485205.9213	UA:TUT
GM-72	736.22	735.88	NAVD 88	2	52	62	684.22	674.22	67	622639.3773	1485217.5213	UA:TT
GM-74S	732.52	732.17	NGVD 29	2	40	50	692.52	682.52	50	622444.3916	1484733.7684	UA:TT
GM-75S	737.20	736.67	NAVD 88	2	42	52	695.20	685.20	52	622796.9285	1485021.8931	UA:TT
GM-76S	738.58	738.09	NAVD 88	2	27	37	711.58	701.58	37	623545.3663	1485296.6672	UA:TT
GM-77S	740.55	740.18	NAVD 88	2	33	43	707.55	697.55	43	621583.3135	1485875.9373	UA:TT
GM-78	721.58	721.18	NGVD 29	2	40	50	681.58	671.58	70	618257.6566	1483035.5080	UA
GM-79	717.57	717.02	NAVD 88	2	45	55	672.57	662.57	60	618974.2075	1481032.1012	UA:TT

Table 6
Groundwater Well Construction Details
RACER Trust Moraine Facilities
Moraine, Ohio

Well	Surface Elevation ft amsl	TOC Elevation ft amsl	Vertical Datum Used	Well Diameter inches	Screened Interval ft bls	Screened Interval ft bls	Screened Interval ft amsl	Screened Interval ft amsl	Borehole Depth ft bls	State Plane Coordinates Northing, y	State Plane Coordinates Easting, x	Geologic Modifiers
Upper Aquifer Wells												
GM-80	715.37	714.95	NAVD 88	2	15	25	700.37	690.37	25	617955.6603	1480925.8022	UA:WT
GM-81	714.87	714.36	NAVD 88	2	50	60	664.87	654.87	90	617939.2906	1480921.4302	UA
GM-83S	726.44	725.84	NGVD 29	2	44	54	682.44	672.44	54	622568.7569	1482112.8680	UA:TT
RMW-89	738.84	738.50	NAVD 88	2	40.7	50.7	698.14	688.14	65	623394.9330	1484777.0130	UA
RMW-90	727.21	726.84	NAVD 88	2	43.5	53.5	683.71	673.71	100	623394.2373	1484776.9973	UA:TT
RMW-91	723.16	725.50	NAVD 88	2	48	53	675.16	670.16	57	620642.1503	1482814.1912	UA:WT
RMW-92	723.37	725.92	NAVD 88	2	26	36	697.37	687.37	38	620642.2605	1482803.2532	UA
RMW-93	724.66	727.56	NAVD 88	2	50	60	674.66	664.66	60	620378.8205	1482440.7132	UA:TT
RMW-94	724.83	727.53	NAVD 88	2	30	40	694.83	684.83	40	620379.9835	1482432.7103	UA
RMW-95	716.01	715.33	NAVD 88	2	6.3	21.3	709.71	694.71	22	619596.2154	1480976.9852	UA
RMW-96	717.12	716.73	NAVD 88	2	7.5	22.5	709.62	694.62	24	618973.8564	1481026.2131	UA
RMW-97	714.84	714.21	NAVD 88	2	9	24	705.84	690.84	24	618501.5463	1480934.2432	UA
RMW-98	725.40	725.10	NAVD 88	2	52	62	673.40	663.40	65	619768.1714	1481983.4441	UA:TT
RMW-99	725.40	724.95	NAVD 88	2	25	35	700.40	690.40	35	619767.9175	1481979.7421	UA
RMW-100	724.08	723.58	NAVD 88	2	40	50	684.08	674.08	56	619667.5355	1482692.4191	UA:TT
RMW-101	723.74	723.47	NAVD 88	2	25	35	698.74	688.74	35	619669.6103	1482702.1871	UA
RMW-102	NA	NA	NA	2	15	25	NA	NA	25	NA	NA	UA:WT
PW-1S	736.18	735.76	NAVD 88	2	36	51	700.18	685.18	54	622968.4833	1484992.4841	UA
PW-1D	736.18	735.82	NAVD 88	2	51.5	56.5	684.68	679.68	60	622975.6174	1484993.9713	UA:TT
PW-2S/D	736.05	735.34	NAVD 88	2	41	61	695.05	675.05	62.5	622929.6694	1484983.1901	UA:TT
PW-3S	736.13	735.75	NAVD 88	2	36	41	700.13	695.13	70	622949.6336	1484987.7341	UA
PW-3D	736.13	735.79	NAVD 88	2	47	57	689.13	679.13	70	622949.3675	1484987.8601	UA:TT
PW-4S	736.17	735.73	NAVD 88	2	37	47	699.17	689.17	50	622964.5725	1484989.6701	UA
PW-4D	736.18	735.67	NAVD 88	2	50	55	686.18	681.18	55	622971.9665	1484991.4043	UA:TT
PW-5S	735.99	735.52	NAVD 88	2	39	49	696.99	686.99	63	622919.2714	1484979.0700	UA
PW-5D	735.99	735.62	NAVD 88	2	56	61	679.99	674.99	63	622919.0355	1484979.3473	UA:TT
PW-6S	731.35	731.08	NAVD 88	2	25	35	706.35	696.35	35	622831.4373	1484839.3141	UA
PW-6D	731.35	731.04	NAVD 88	2	40	50	691.35	681.35	63.5	622837.3753	1484840.7872	UA:TT
EW-1	725.30	723.55	NAVD 88	8	40	60	685.30	665.30	63	620643.5204	1482283.2113	UA:TT
EW-2	725.80	724.48	NAVD 88	8	39.5	59.5	686.30	666.30	63	620644.8832	1482499.9953	UA:TT
EW-3	723.17	721.98	NAVD 88	8	40	52	683.17	671.17	55.00	620646.3855	1482720.7373	UA:TT
IW-1	726.08	722.84	NAVD 88	8	40	60	686.08	666.08	63.00	620405.0182	1482239.1493	UA:TT
IW-2	725.71	722.20	NAVD 88	8	39.5	59.5	686.21	666.21	63.00	620369.9035	1482502.2951	UA:TT
IW-3	725.50	722.38	NAVD 88	8	25	57	700.50	668.50	59.00	620367.3425	1482636.8894	UA:TT
IW-4	723.41	720.59	NAVD 88	8	25	55	698.41	668.41	57.00	620353.3333	1482784.9193	UA:TT
EAST	NM	730.98	NGVD 29	2	NA	NA	NA	NA	71	620545.7428	1483674.2296	UA:TT

Table 6
Groundwater Well Construction Details
RACER Trust Moraine Facilities
Moraine, Ohio

Well	Surface Elevation ft amsl	TOC Elevation ft amsl	Vertical Datum Used	Well Diameter inches	Screened Interval ft bls	Screened Interval ft bls	Screened Interval ft amsl	Screened Interval ft amsl	Borehole Depth ft bls	State Plane Coordinates Northing, y	State Plane Coordinates Easting, x	Geologic Modifiers
Upper Aquifer Wells												
WEST	NM	731.08	NAVD 88	2	NA	NA	NA	NA	52	620509.5489	1483299.1982	UA:TT
WSU-17	726.93	726.18	NGVD 29	2	11.69	66.9	715.24	659.28	67	619558.3274	1482898.5143	UA:TT
WSU-18	734.18	733.52	NGVD 29	2	29.2	69.2	704.98	664.32	69	619554.9064	1483096.6037	UA:TT
WSU-19	727.28	726.62	NGVD 29	2	33.4	63.4	693.88	663.22	63	619736.8210	1482880.5343	UA:TT
WSU-22	726.21	726.49	NGVD 29	2	NA	NA	NA	NA	52	620311.3992	1482687.1755	UA:TT
WSU-23	724.65	724.90	NAVD 88	2	NA	NA	NA	NA	58	620364.2043	1481954.6233	UA:TT
WSU-24	725.10	724.82	NGVD 29	2	NA	NA	NA	NA	66	619123.9935	1483169.1543	UA:TT
TW-2[(2)]	NM	733.38	NGVD 29	10	35	45	696.00	686.00	45	619624.0349	1482956.5220	UA:TT
ME-2[(4)]	731.60	731.28	NGVD 29	2	27	37	704.60	694.60	37	621327.2647	1484014.4997	UA:WT
ME-3[(4)]	732.23	731.73	NGVD 29	2	29	39	703.23	693.23	39	621288.4112	1483969.5710	UA:WT
ME-4[(4)]	732.05	732.24	NGVD 29	2	26	36	706.05	696.05	36	621321.5257	1483952.4713	UA:WT
ME-6[(4)]	733.09	732.68	NGVD 29	2	29	39	704.09	694.09	39	621706.8006	1484056.9183	UA:WT
MW-1[(6)]	713.60	715.53	NGVD 29	2	61.2	71.2	652.40	642.40	71.7	621420.5218	1480209.1085	UA:TT
MW-4[(6)]	707.45	707.19	NGVD 29	2	19.6	39.6	687.85	667.85	40	619035.3973	1478050.2153	UA
MW-5[(6)]	708.62	708.37	NAVD 88	2	22.5	42.5	686.12	666.12	43	618790.0375	1478957.6694	UA
MW-9[(6)]	712.23	711.93	NAVD 88	2	63	73	649.23	639.23	73.5	617171.4834	1478734.3033	UA

Table 6
Groundwater Well Construction Details
RACER Trust Moraine Facilities
Moraine, Ohio

Well	Surface Elevation ft amsl	TOC Elevation ft amsl	Vertical Datum Used	Well Diameter inches	Screened Interval ft bls	Screened Interval ft bls	Screened Interval ft amsl	Screened Interval ft amsl	Borehole Depth ft bls	State Plane Coordinates Northing, y	State Plane Coordinates Easting, x	Geologic Modifiers
Lower Aquifer Wells												
GM-1	NM	735.74	NGVD 29	2	90	100	NA	NA	100	619570.5560	1483421.7187	LA
GM-3	NM	730.44	NGVD 29	2	90	100	NA	NA	100	619621.9125	1482926.4692	LA
GM-4	NM	731.46	NGVD 29	2	140	150	NA	NA	150	619602.6754	1482922.7239	LA
GM-5	NM	731.29	NGVD 29	2	90	100	NA	NA	100	619588.5805	1483126.5199	LA
GM-7R	NM	735.61	NGVD 29	2	80	90	NA	NA	91	619863.8661	1482962.0547	LA
GM-9	NM	724.07	NGVD 29	2	90	100	NA	NA	100	618771.6911	1482674.0591	LA
GM-11	NM	723.71	NGVD 29	2	90	100	NA	NA	100	619318.5089	1482694.0850	LA
GM-13	722.88	722.78	NAVD 88	2	90	100	632.879	622.879	100	619238.8323	1482505.1833	LA
GM-14	722.64	722.46	NAVD 88	2	140	150	582.639	572.639	150	619234.0235	1482491.2341	LA
GM-15	724.66	724.46	NAVD 88	2	90	100	634.655	624.655	100	619422.4854	1482146.2630	LA
GM-19D	727.90	729.40	NGVD 29	4	145	150	NA	NA	150	620339.8789	1483063.5355	LA
GM-20D	NM	727.26	NGVD 29	4	87	92	NA	NA	92	619177.7112	1483236.8897	LA
GM-39	731.15	730.95	NGVD 29	2	106	116	625.15	615.15	116	623705.4735	1484609.1916	LA
GM-40	727.28	727.04	NGVD 29	2	140	150	587.28	577.28	150	621693.6605	1483084.8346	LA
GM-41	731.22	733.65	NGVD 29	2	104	114	627.22	617.22	114	621635.8247	1484818.2843	LA
GM-42	729.48	729.16	NGVD 29	2	140	150	589.48	579.48	150	620810.1825	1483562.4718	LA
GM-54	730.51	730.29	NGVD 29	2	70	80	660.51	650.51	80	621182.0368	1484848.7664	LA
GM-56	719.75	719.52	NGVD 29	2	75	85	644.75	634.75	85	618006.2067	1482448.5881	LA:NTP
GM-58	735.59	735.46	NGVD 29	2	72	82	663.59	653.59	82	621541.9705	1485308.7484	LA:BT
GM-61	731.56	731.28	NAVD 88	2	70	80	661.56	651.56	80	622768.3373	1484690.5273	LA:BT
GM-65D	723.83	723.54	NGVD 29	2	85	95	638.83	628.83	108	617389.4778	1481380.3420	LA:NTP
GM-67D	731.69	731.23	NAVD 88	2	70	80	661.69	651.69	121	623059.1783	1484516.3633	LA:BT
GM-68D	732.46	732.27	NGVD 29	2	64	74	668.46	658.46	150	622327.6609	1484645.9882	LA:BT
GM-69	732.42	732.08	NGVD 29	2	90	100	642.42	632.42	140	621314.7862	1484401.5369	LA
GM-70	737.47	737.19	NGVD 29	2	72	82	665.47	655.47	120	621944.0698	1485505.8069	LA
GM-73	736.40	736.00	NAVD 88	2	85	95	651.40	641.40	120	622641.7113	1485199.4184	LA
GM-74D	732.49	732.04	NGVD 29	2	69	79	663.49	653.49	120	622450.1864	1484735.5674	LA:BT
GM-75D	737.10	736.65	NAVD 88	2	85	95	652.10	642.10	120	622799.4485	1485010.2344	LA
GM-76D	738.65	737.96	NAVD 88	2	70	80	668.65	658.65	120	623539.9404	1485295.2541	LA:BT
GM-77D	741.52	740.93	NGVD 29	2	75	85	666.52	656.52	100	621574.2863	1485889.4242	LA:BT
GM-82	732.55	732.14	NGVD 29	2	85	95	647.55	637.55	119.5	621972.7596	1484304.8749	LA
GM-83D	726.41	725.77	NGVD 29	2	110	120	616.41	606.41	120	622568.2473	1482120.4571	LA
GM-84	740.44	739.92	NGVD 29	2	96.5	106.5	643.94	633.94	120	620619.4733	1485522.2791	LA:BT
RMW-85[(7)]	736.01	735.62	NAVD 88	2	85	95	651.01	641.01	105	622913.9673	1484978.1501	LA
RMW-86[(7)]	728.85	729.22	NGVD 29	2	70	80	658.85	648.85	105	620409.8729	1483253.3868	LA:BT
RMW-87[(7)]	727.69	728.01	NGVD 29	2	67	77	660.69	650.69	100	621671.7643	1483277.4885	LA:BT
RMW-88	735.824	738.00	NAVD 88	2	90	100	645.824	635.824	100	623617.9875	1484203.4942	LA

Table 6
Groundwater Well Construction Details
RACER Trust Moraine Facilities
Moraine, Ohio

Well	Surface Elevation ft amsl	TOC Elevation ft amsl	Vertical Datum Used	Well Diameter inches	Screened Interval ft bls	Screened Interval ft bls	Screened Interval ft amsl	Screened Interval ft amsl	Borehole Depth ft bls	State Plane Coordinates Northing, y	State Plane Coordinates Easting, x	Geologic Modifiers
Lower Aquifer Wells												
HR-12	741.00	742.64	NGVD 29	4	120	130	621.00	611.00	130	625702.4754	1485249.9932	LA
HR-13	735.82	738.00	NAVD 88	4	75	85	660.82	650.82	85	625052.3203	1484580.6972	LA:BT
HR-14	729.90	731.63	NGVD 29	4	78	88	651.90	641.90	88	623675.3334	1483782.3572	LA
HR-15	732.10	733.74	NGVD 29	4	88	98	644.10	634.10	98	623712.7728	1483595.9249	LA
M73C	NM	716.55	NGVD 29	NA	NA	NA	NA	NA	NA	618973.2997	1482114.3979	LA
MT69[8]	719.84	722.71	NGVD 29	8	NA	NA	NA	NA	158	617772.6174	1450654.7321	LA
MT576M	750.00	751.46	NGVD 29	5	NA	NA	NA	NA	114	622940.3172	1487799.5539	LA
MT596M[9]	759.18	757.73	NGVD 29	5	NA	NA	NA	NA	89	624057.1360	1488849.2693	LA
DN-13	724.09	727.54	NGVD 29	20	110	170	614.09	554.09	170	619197.5896	1482251.6201	LA
11B	744.50	742.56	NGVD 29	NA	NA	NA	NA	NA	158	622501.3482	1485799.8083	LA
A	NM	739.00	NGVD 29	20	155	205	NA	NA	205	624325.4355	1484805.8917	LA
31	NM	734.05	NGVD 29	20	90	122	NA	NA	122	623727.3341	1485049.1907	LA
34	NM	733.46	NGVD 29	20	107	140	NA	NA	140	622178.5003	1485017.7441	LA
39	NM	732.07	NGVD 29	20	117	142	NA	NA	145	623442.5209	1484987.4851	LA
44	733.91	734.62	NGVD 29	24	128	166	605.91	567.91	NA	624519.8827	1483988.9900	LA
FW-1A	NM	739.89	NGVD 29	24	105	166	NA	NA	169	625357.5225	1486090.4582	LA
FW-2	NM	737.48	NGVD 29	20	NA	150	NA	NA	160	622516.4881	1485616.5997	LA
FW-3	NM	739.26	NGVD 29	20	NA	141	NA	NA	200	622674.8976	1484968.9343	LA
FW-4	NM	731.62	NGVD 29	14	NA	136	NA	NA	160	620605.2151	1484338.1978	LA

NOTES:

Survey of well coordinates were originally to a site-specific coordinate system in feet with the vertical datum as the National Geodetic Vertical Datum of 1929 (NGVD 29) using an on-site benchmark.
Base map and well coordinates were converted in 2011 to the Ohio South State Plane coordinate system North American Datum of 1983 (NAD 83) and NGVD 29 was retained as the vertical datum.
In 2019 several monitoring wells were re-surveyed using the North American Vertical Datum of 1988 (NAVD 88) and NAD 83.
TOC - Top of Casing.
ft amsl - feet above mean sea level.
ft bls - feet below land surface.
(1) - Ground surface elevation estimated based on a 2-foot height of outer casing stick-up.
(2) - Survey estimated.
(3) - Well flush mount damaged and obstructed at depth.
(4) - Depth of screened interval and total well depth have been modified from the well log due to site construction.
(5) - Well above grade construction damaged in 2011.
(6) - City of Moraine Monitoring Wells.
(7) - TOC elevation is calculated based on adjacent well elevations and field measurements on November 26, 2012.
(8) - Well unusable - collapsed screen.
(9) - Measuring point is top of cement housing.

BT - Below Till (regional clay till).
LA - Lower Aquifer.
NA - Not Available.
NM - Not Measured.
NTP - No Till Present.
TT - Top of Till (regional clay till).
TUT - Top of Upper Till (upper clay till).
UA - Upper Aquifer.
WT - Water Table (screened across the water table interface).

Table 7
Groundwater Level Measurements Collected During 2019
RACER Trust Moraine Facilities
Moraine, Ohio

Well	Measuring Point Elevation (feet AMSL)	Date	Depth-to-Water (feet)	Total Depth (feet)	Groundwater or Surface Water Elevation (feet AMSL)	Survey Datum Used
Upper Aquifer Wells						
W-2-N	731.68	7/9/2019	19.57	59.70	712.11	NGVD 29
W-3-N	733.66	7/9/2019	21.51	57.60	712.15	NGVD 29
W-4-N	731.63	7/9/2019	19.33	66.60	712.30	NGVD 29
HR-4	742.60	7/9/2019	29.94	66.80	712.66	NGVD 29
HR-16	726.02	7/2/2019	16.37	65.00	709.65	NAVD 88
HR-16	726.02	7/9/2019	16.68	65.00	709.34	NAVD 88
HR-17	725.42	7/2/2019	15.29	59.55	710.13	NAVD 88
HR-17	725.42	7/9/2019	15.58	59.55	709.84	NAVD 88
W-2-S	725.67	7/2/2019	16.65	67.00	709.02	NAVD 88
W-2-S	725.67	7/9/2019	16.95	67.00	708.72	NAVD 88
W-3-S	728.16	7/2/2019	19.00	76.40	709.16	NAVD 88
W-3-S	728.16	7/9/2019	19.31	76.40	708.85	NAVD 88
W-4-S	726.76	7/2/2019	17.55	72.50	709.21	NAVD 88
W-4-S	726.76	7/9/2019	17.65	72.50	709.11	NAVD 88
GM-2	734.76	7/2/2019	24.65	56.30	710.11	NAVD 88
GM-6	729.24	7/2/2019	19.94	46.30	709.30	NAVD 88
GM-8	734.40	7/2/2019	24.85	50.00	709.55	NAVD 88
GM-10	723.90	7/2/2019	13.91	50.20	709.99	NGVD 29
GM-16	724.29	7/2/2019	15.55	58.00	708.74	NAVD 88
GM-17	722.79	7/2/2019	13.69	50.05	709.10	NAVD 88
GM-18	722.71	7/2/2019	13.84	54.86	708.87	NAVD 88
GM-19S	729.72	7/2/2019	19.89	57.00	709.83	NAVD 88
GM-34	729.27	7/2/2019	18.88	35.25	710.39	NAVD 88
Upper Aquifer Wells						
GM-45	728.13	7/2/2019	17.72	60.00	710.41	NAVD 88
GM-47	725.81	7/2/2019	16.70	59.40	709.11	NAVD 88
GM-48	727.68	7/2/2019	19.21	73.02	708.47	NAVD 88
GM-49	726.99	7/2/2019	18.82	76.29	708.17	NAVD 88
GM-50	725.62	7/2/2019	16.54	39.50	709.08	NAVD 88
GM-51	727.45	7/2/2019	19.47	44.20	707.98	NAVD 88
GM-52	726.67	7/2/2019	18.56	44.00	708.11	NAVD 88
GM-63	724.86	7/2/2019	15.41	39.10	709.45	NAVD 88
RMW-91	725.50	7/2/2019	15.69	57.00	709.81	NAVD 88
RMW-92	725.92	7/2/2019	16.14	38.00	709.78	NAVD 88
RMW-93	727.56	7/2/2019	18.35	40.00	709.21	NAVD 88
RMW-94	727.53	7/2/2019	18.30	40.00	709.23	NAVD 88
RMW-98	725.10	7/2/2019	16.51	62.00	708.59	NAVD 88
RMW-99	724.95	7/2/2019	16.33	35.00	708.62	NAVD 88
RMW-100	723.58	7/2/2019	14.26	50.00	709.32	NAVD 88
RMW-101	723.47	7/2/2019	14.44	53.00	709.03	NAVD 88
RMW-102	NM	7/2/2019	15.25	25.00	NM	NA
WEST	731.08	7/2/2019	19.75	51.40	711.33	NAVD 88
WSU-23	724.00	7/2/2019	15.12	57.40	708.88	NAVD 88
Lower Aquifer Wells						
GM-1	735.74	7/2/2019	24.96	103.40	710.78	NGVD 29
GM-5	731.29	7/2/2019	20.90	102.00	710.39	NGVD 29
GM-9	724.07	7/2/2019	14.20	99.60	709.87	NGVD 29
GM-11	723.71	7/2/2019	13.90	99.20	709.81	NGVD 29
GM-13	723.82	7/2/2019	14.37	100.10	709.45	NGVD 29
GM-14	723.50	7/2/2019	14.16	150.00	709.34	NGVD 29
GM-15	725.23	7/2/2019	16.12	98.90	709.11	NGVD 29
GM-20D	727.26	7/2/2019	16.33	100.80	710.93	NGVD 29
M73C	716.55	7/2/2019	7.18	NM	709.37	NGVD 29
IRZ Wells						
RZ-4A	724.75	7/2/2019	14.15	55.10	710.60	NAVD 88
RZ-4O	725.48	7/2/2019	15.90	60.50	709.58	NAVD 88
RZ-4L	726.56	7/2/2019	17.08	62.50	709.48	NAVD 88

NOTES:

Elevations are reported in feet above mean sea level (AMSL).

Groundwater levels were measured on July 2 and 9, 2019 using electronic water level indicators.

Groundwater level measurements are reported in feet below the measuring point.

Measuring point is the top of the well casing or surveyed measuring point.

NA - Not Applicable.

NM - Not Measured.

Survey of well coordinates were originally to a site-specific coordinate system in feet with the vertical datum as the National Geodetic Vertical Datum of 1929 (NGVD 29) using an on-site benchmark. In 2019 several monitoring wells were re-surveyed using the North American Vertical Datum of 1988 (NAVD 88).

Table 8
Summary of Precipitation Measurements Recorded by the National Weather Service during 2019 – Dayton, Ohio
RACER Trust Moraine Facilities
Moraine, Ohio

Month	Actual Precipitation	Average Precipitation[1]	Departure from Average
January	3.25	2.71	0.54 Above
February	6.15	2.24	3.91 Above
March	3.59	3.34	0.25 Above
April	4.22	4.09	0.13 Above
May	6.06	4.66	1.40 Above
June	3.80	4.17	0.37 Below
July	5.71	4.11	1.60 Above
August	1.26	2.99	1.73 Below
September	0.70	3.30	2.60 Below
October	3.29	2.93	0.36 Above
November	1.63	3.39	1.76 Below
December	3.31	3.12	0.19 Above
2019 Total	**42.97**	**41.05**	**1.92 Above**

NOTES:
Precipitation measurements are reported in inches.
1: Average precipitation information was obtained from the NOAA Website (http://w2.weather.gov/climate/xmacis.php?wfo=iln) using data from 1981 to 2010.

Table 9
Horizontal and Vertical Hydraulic Gradients for 2019
RACER Trust Moraine Facilities
Moraine, Ohio

Horizontal and Vertical Hydraulic Gradients - 2019			
Horizontal Hydraulic Gradients			
Upgradient	**Downgradient**	**Lateral Distance (ft)**	**Gradient**
Closed North Settling Lagoon - July 9, 2019			
HR-4 (712.66 ft amsl)	W-2-N (712.11 ft amsl)	969	5.7E-04
Closed South Settling Lagoon - July 9, 2019			
HR-17 (709.84 ft amsl)	W-2-S (708.72 ft amsl)	913	1.2E-03
Horizontal Hydraulic Gradients (TIN)			
			Gradient / Azimuth[1]
TIN A			
GM-1 (710.78 ft amsl)	GM-5 (710.39 ft amsl)	GM-20D (710.93 ft amsl)	1.6E-03 / 308
TIN B			
GM-5 (710.39 ft amsl)	GM-20D (710.93 ft amsl)	GM-14 (709.34 ft amsl)	2.3E-03 / 289
TIN C			
GM-14 (709.34 ft amsl)	GM-20D (710.93 ft amsl)	GM-9 (709.87 ft amsl)	2.2E-03 / 280
TIN D			
GM-9 (709.87 ft amsl)	GM-14 (709.34 ft amsl)	M73C (709.37 ft amsl)	1.1E-03 / 329
TIN E			
GM-5 (710.39 ft amsl)	GM-14 (709.34 ft amsl)	GM-15 (709.11 ft amsl)	1.5E-03 / 229
Vertical Hydraulic Gradients			
Upper/Lower Aquifer Wells[2]	**Mid-Screen Distance (ft)**	**Direction (U/D)**	**Gradient**
Off-Site/Downgradient - DN-13 Area - July 2, 2019			
GM-10 (709.99 ft amsl) / GM-9 (709.87 ft amsl)	50	D	2.4E-03
GM-16 (709.75 ft amsl) / GM-15 (709.11 ft amsl)	42	D	1.5E-02
GM-18 (709.96 ft amsl) / GM-13 (709.45 ft amsl)	45	D	1.1E-02
GM-17 (710.15 ft amsl) / GM-11 (709.81)	50	D	6.8E-03

NOTES:

U - Upward vertical hydraulic gradient.

D - Downward vertical hydraulic gradient.

amsl - above mean sea level.

ft - feet.

TIN - triangular irregular network.

1 - Azimuth direction of horizontal hydraulic gradient in degrees from north.

2 - all vertical datum for DN-13 area in NGVD 29.

Table 10
Focused Off-Site Vapor Intrusion Groundwater Screening Results
RACER Trust Moraine Facilities
Moraine, Ohio

	Units	Vapor Intrusion Screening Levels (ug/L)[1,2] Water Table Well?	RMW-95 3/27/2019 Yes	RMW-96 3/27/2019 Yes	RMW-97 3/27/2019 Yes	GM-80 3/27/2019 Yes
Site-Specific Volatile Organic Compounds						
1,1,1-Trichloroethane	ug/L	9,900	0.43 J	< 1.0 U	< 1.0 U	< 1.0 U
1,1-Dichloroethane	ug/L	100	0.35 J	< 1.0 U	< 1.0 U	< 1.0 U
1,1-Dichloroethene	ug/L	250	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Benzene	ug/L	21	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
cis-1,2-Dichloroethene	ug/L	NL	0.24 J	0.43 J	< 1.0 U	0.76 J
Ethylbenzene	ug/L	50	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Tetrachloroethene	ug/L	130	2.6	2.0	2.8	15
Toluene	ug/L	27,000	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
trans-1,2-Dichloroethene	ug/L	NL	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Trichloroethene	ug/L	11	0.63 JB	0.44 JB	0.26 JB	3.6 B
Vinyl chloride	ug/L	2.2	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Xylene (total)	ug/L	560	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U
Total Site-Specific VOCs	ug/L		4.25	2.87	3.06	19.0

NOTES:

< - Constituent not detected above laboratory reporting limit shown.

BOLD - Result above screening level.

ug/L - Micrograms per Liter.

J - Value is estimated.

B - Compound was found in the blank and sample.

1. The data were screened against the most conservative Ohio EPA screening level; if no value was available, the U.S. EPA site-specific vapor intrusion level was used.

2. USEPA Vapor Intrusion Screening Levels were used to calculate target residential screening levels for groundwater concentration based a groundwater temperature of 18.65 degrees celsius (95% UCL of groundwater temperatures from water table well GM-80 from 2010 to 2016) and the lower of either a target cancer risk of 1E-05 or a target hazard index of 1. Screening levels assume 26 year exposure duration, 350 days per year, 24 hours per day.

Table 11
Proposed Groundwater Monitoring Program for 2020
RACER Trust Moraine Facilities
Moraine, Ohio

ARCADIS Design & Consultancy for natural and built assets

Off-Site Downgradient Monitoring Wells Upgradient of Miami Shores Neighborhood

Upper aquifer monitoring wells to be analyzed for the site-specific list of VOCs(1) and field parameters(2):

GM-80	RMW-95	RMW-96	RMW-97

Off-Site DN-13 Capture Zone Performance Monitoring Wells

Lower aquifer monitoring wells to be analyzed for the site-specific list of VOCs(1) and field parameters(2):

DN-13	GM-9	GM-15	GM-20D

In-Situ Reactive Zone Performance Monitoring Wells

Upper aquifer monitoring wells to be analyzed for the site-specific list of VOCs(1), field parameters(2), and biogeochemical parameters(3):

GM-2	GM-6	GM-8	GM-19S	GM-21
GM-23	GM-27	GM-28R	GM-29	GM-32(4)

Closed North and South Settling Lagoon Monitoring Wells

Upper aquifer monitoring wells to be analyzed for the site-specific list of VOCs(1) and field parameters(2):

HR-4	W-2-N	W-3-N	W-4-N
HR-17	W-2-S	W-3-S	W-4-S

Phase I DGR™ Performance Monitoring Wells

Upper aquifer monitoring wells(5) to be analyzed for the site-specific list of VOCs(1) and field parameters(2):

HR-16	GM-49	GM-63	RMW-93	RMW-100
GM-16	GM-50	GM-64	RMW-94	RMW-101
GM-47	GM-51	RMW-91	RMW-98	RMW-102
GM-48	GM-52	RMW-92	RMW-99	WSU-23

Analytical Methods

Parameter	Analytical Method
Site-specific list of VOCs	SW846 8260B
Total organic carbon	SW846 9060
Ethane, ethene, methane	AM20GAX

NOTES:

1 – Site-specific list of VOCs for 2020 includes: benzene, 1,1-dichloroethane, 1,1-dichloroethene, cis-1,2-dichloroethene, trans-1,2-dichloroethene, ethylbenzene, tetrachloroethene, toluene, 1,1,1-trichloroethane, trichloroethene, vinyl chloride, and xylenes.

2 – Field parameters include: pH, specific conductivity, dissolved oxygen, oxidation reduction potential, and temperature.

3 – Biogeochemical parameters include: total organic carbon (TOC), ethane, ethene, and methane.

4 – Upper aquifer monitoring well GM-32 will not be analyzed for ethane, ethene, or methane.

5 – Includes monitoring wells HR-17, W-2-S, W-3-S, and W-4-S.

FIGURES

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LEGEND

- DRAINAGE DITCH
- FORMER BUILDING/SITE FEATURE
- CURRENT BUILDING
- PROPERTY BOUNDARY

Notes:
1. High-resolution orthomosaic developed using imagery collected by Arcadis US via DJI Zenmuse X4S camera mounted to a DJI Inspire 2 UAV during the dates of 10/09/2019-10/10/2019.
2. Additional Aerial Source: DigitalGlobe, dated 8/22/2018, serviced by ESRI World Imagery Service, accessed via ESRI ArcGIS Desktop on 2/18/2020.

RACER TRUST
MORAINE, OHIO
2019 GROUNDWATER MONITORING REPORT

SITE LAYOUT

ARCADIS Design & Consultancy for natural and built assets

FIGURE 1

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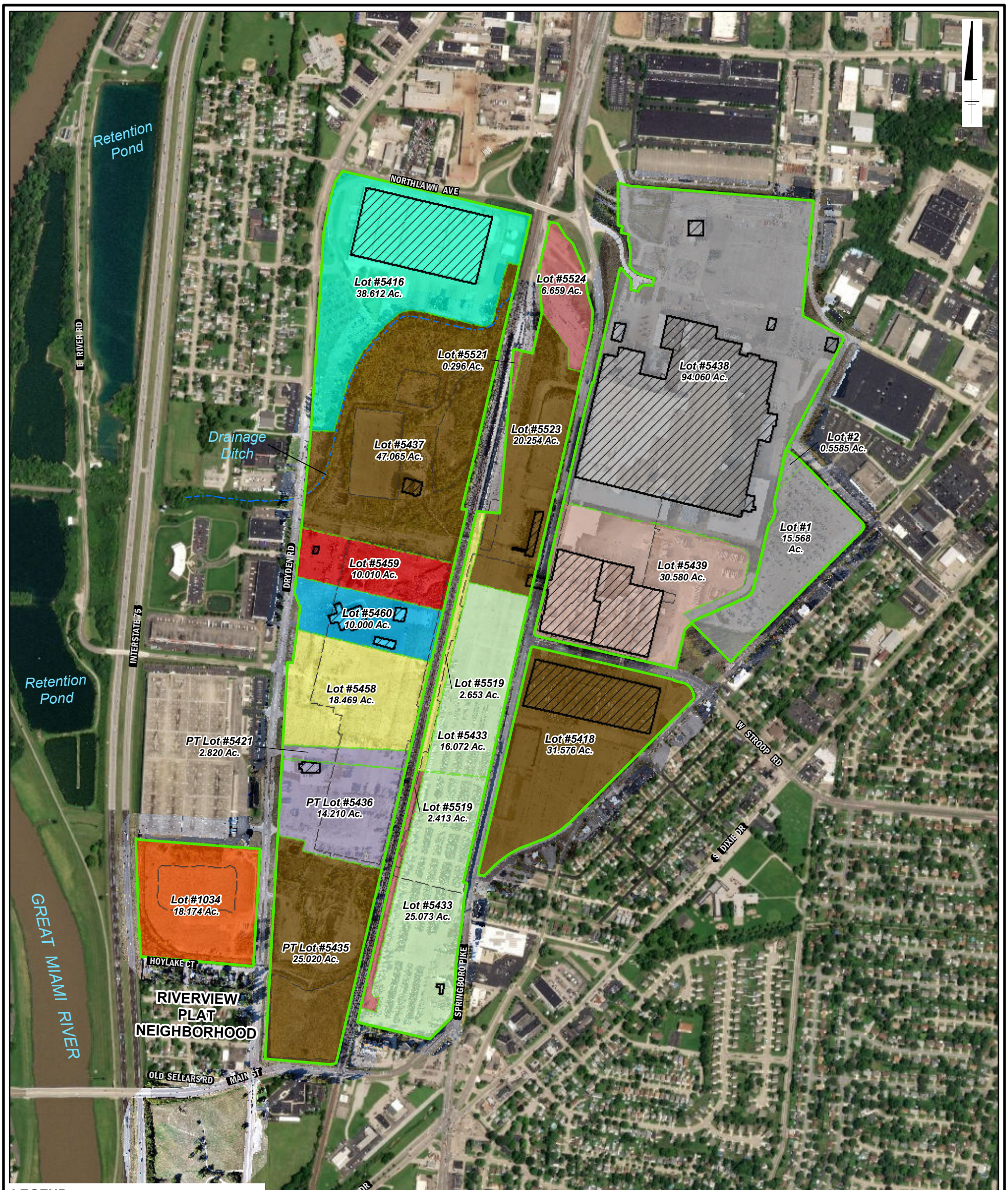

LEGEND

- DRAINAGE DITCH
- PROPERTY BOUNDARY
- PARCEL LOT BOUNDARY
- CURRENT BUILDING
- FORMER BUILDING/SITE FEATURE

LOT LAND OWNERSHIP

- COPART OF CONNECTICUT INC
- FUYAO ASSET MANAGEMENT A LLC
- GENERAL MOTORS COMPANY
- ICP MORAINE LLC
- ICP MORAINE SPE LLC AND IRG MORAINE SPE LLC
- INLAND PROPERTY MANAGEMENT INC
- IRG MORAINE LLC
- NORFOLK SOUTHERN RAILWAY FKA CONSOLIDATED RAIL CORPORATION
- RACER PROPERTIES LLC
- STATE OF OHIO
- WRIGHT WAREHOUSING INC.

Notes:
1. High-resolution orthomosaic developed using imagery collected by Arcadis US via DJI Zenmuse X4S camera mounted to a DJI Inspire 2 UAV during the dates of 10/09/2019-10/10/2019.
2. Additional Aerial Source: DigitalGlobe, dated 8/22/2018, serviced by ESRI World Imagery Service, accessed via ESRI ArcGIS Desktop on 2/15/2020.
3. Lot information was checked on 01/29/2020 at http://engineer.gomvo.org/apps/landrecords/.
4. Ac. = Acres

RACER TRUST
MORAINE, OHIO
2019 GROUNDWATER MONITORING REPORT

SITE PARCEL MAP

ARCADIS Design & Consultancy for natural and built assets

FIGURE 2

Created By: jchen Last Saved By: jchen
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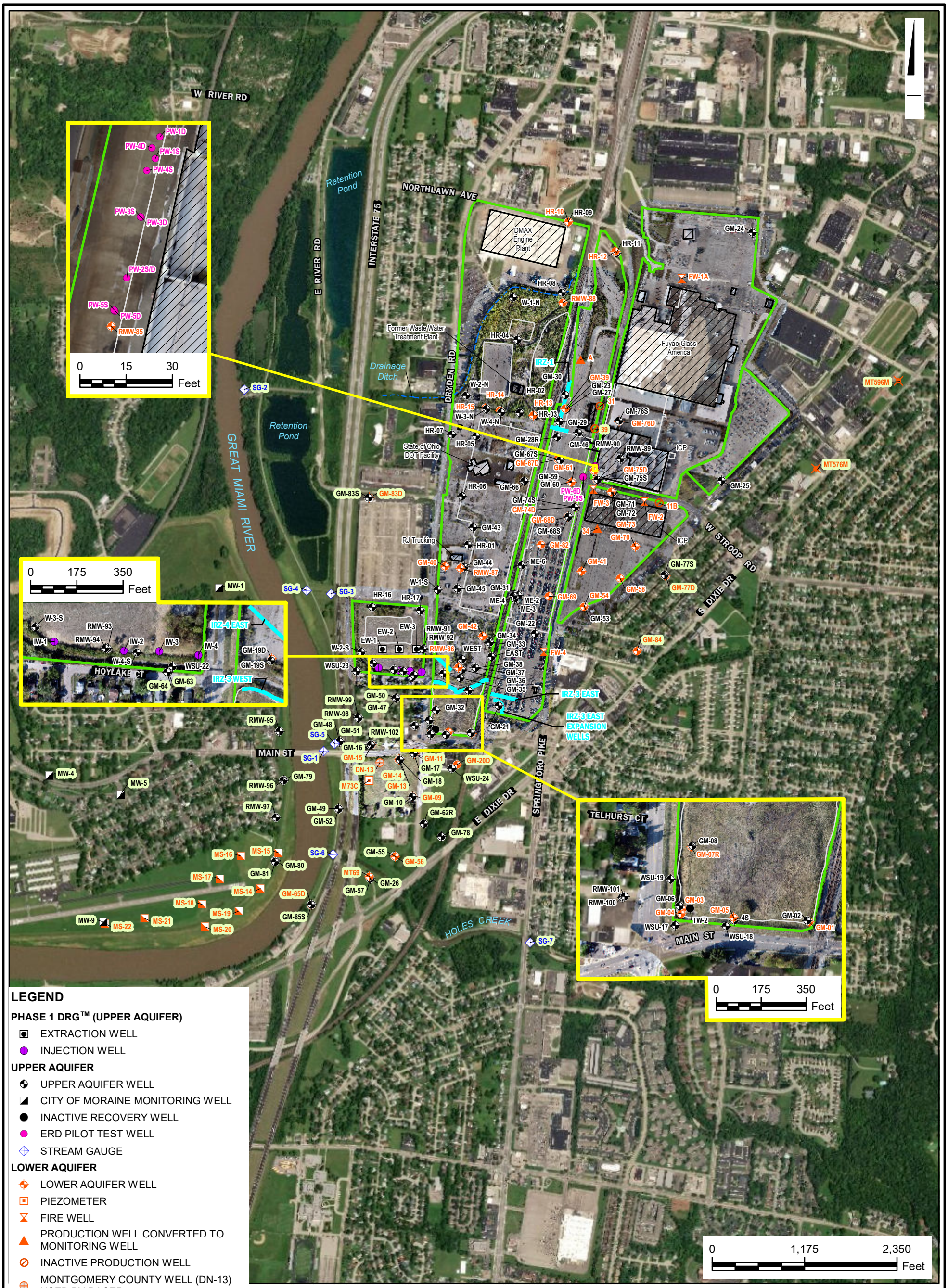

LEGEND

PHASE 1 DRG™ (UPPER AQUIFER)
- EXTRACTION WELL
- INJECTION WELL

UPPER AQUIFER
- UPPER AQUIFER WELL
- CITY OF MORAINE MONITORING WELL
- INACTIVE RECOVERY WELL
- ERD PILOT TEST WELL
- STREAM GAUGE

LOWER AQUIFER
- LOWER AQUIFER WELL
- PIEZOMETER
- FIRE WELL
- PRODUCTION WELL CONVERTED TO MONITORING WELL
- INACTIVE PRODUCTION WELL
- MONTGOMERY COUNTY WELL (DN-13) USED BY RACER
- MONTGOMERY COUNTY WELL (INACTIVE)
- PRIVATE WELL
- CARBON SOURCE INTRODUCTION WELLS, REACTIVE ZONES
- DRAINAGE DITCH
- CURRENT BUILDING
- FORMER BUILDING/SITE FEATURE
- PROPERTY BOUNDARY

Notes:
1. High-resolution orthomosaic developed using imagery collected by Arcadis US via DJI Zenmuse X4S camera mounted to a DJI Inspire 2 UAV during the dates of 10/09/2019-10/10/2019.
2. Additional Aerial Source; DigitalGlobe, dated 8/22/2018, serviced by ESRI World Imagery Service, accessed via ESRI ArcGIS Desktop on 2/15/2020.
3. Parcel data downloaded on 01/22/2020 from http://www.mcauditor.org/downloads/gis_downloads.cfm/.
4. Olive-shaded labels indicate offsite wells.

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MORAINE, OHIO
2019 GROUNDWATER MONITORING REPORT

SITE-WIDE CORRECTIVE MEASURES

ARCADIS Design & Consultancy for natural and built assets

FIGURE 3

Created By: jchen Last Saved By: jchen
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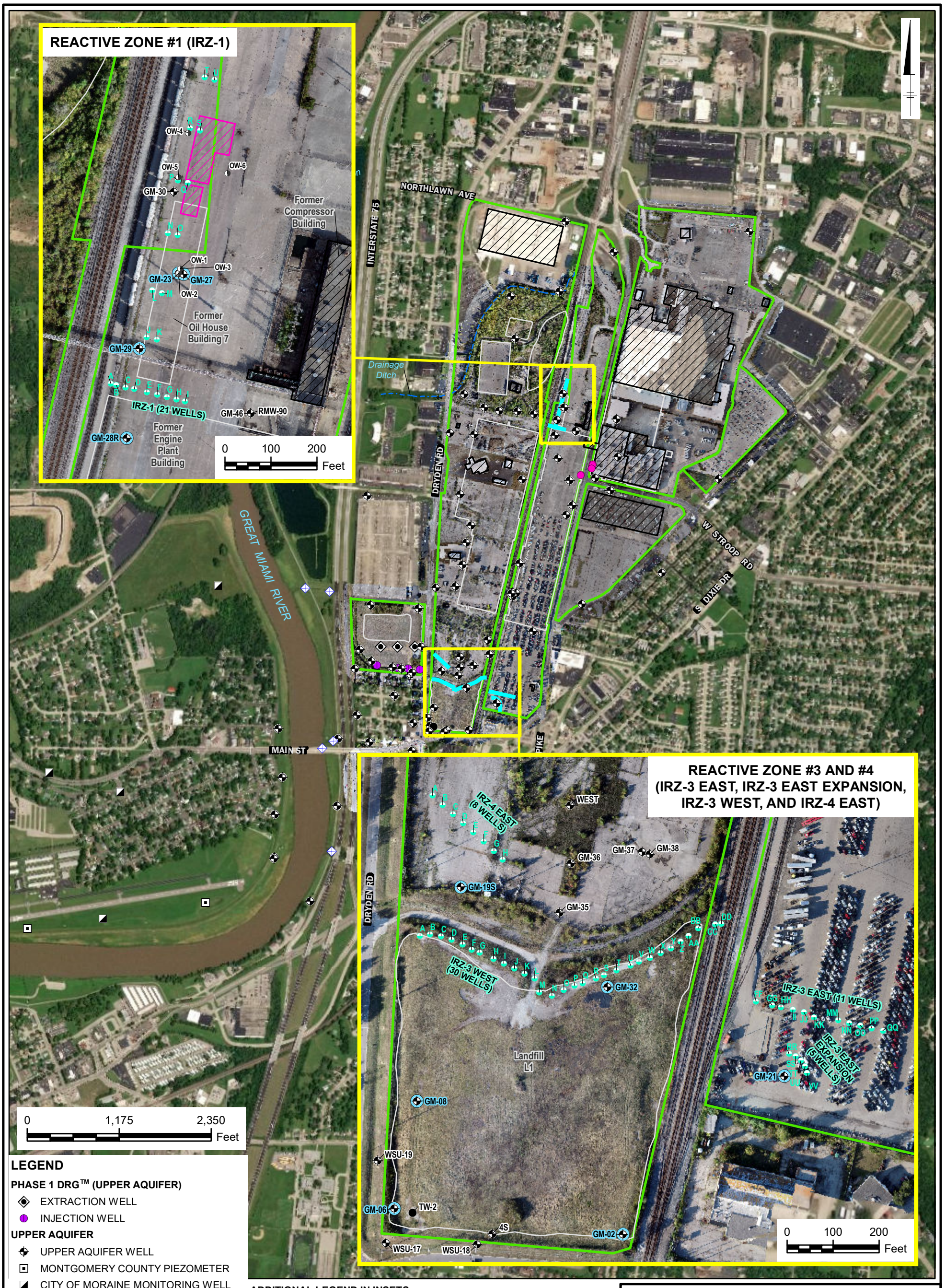

LEGEND

PHASE 1 DRG™ (UPPER AQUIFER)

- EXTRACTION WELL
- INJECTION WELL

UPPER AQUIFER

- UPPER AQUIFER WELL
- MONTGOMERY COUNTY PIEZOMETER
- CITY OF MORAINE MONITORING WELL
- INACTIVE RECOVERY WELL
- ERD PILOT TEST WELL
- STREAM GAUGE
- CARBON SOURCE INTRODUCTION WELLS, REACTIVE ZONES
- DRAINAGE DITCH
- CURRENT BUILDING
- FORMER BUILDING/SITE FEATURE
- PROPERTY BOUNDARY

ADDITIONAL LEGEND IN INSETS

- OXIDATION WELL (INACTIVE)
- CARBON SOURCE INTRODUCTION WELL
- UPPER AQUIFER MONITORING WELL SAMPLED IN 2019
- APPROXIMATE LOCATION OF FORMER MORAINE ENGINE TANK FARM

Notes:
1. High-resolution orthomosaic developed using imagery collected by Arcadis US via DJI Zenmuse X4S camera mounted to a DJI Inspire 2 UAV during the dates of 10/09/2019-10/10/2019.
2. Additional Aerial Source; DigitalGlobe, dated 8/22/2018, serviced by ESRI World Imagery Service, accessed via ESRI ArcGIS Desktop on 2/18/2020.

RACER TRUST
MORAINE, OHIO
2019 GROUNDWATER MONITORING REPORT

UPPER AQUIFER REACTIVE ZONES

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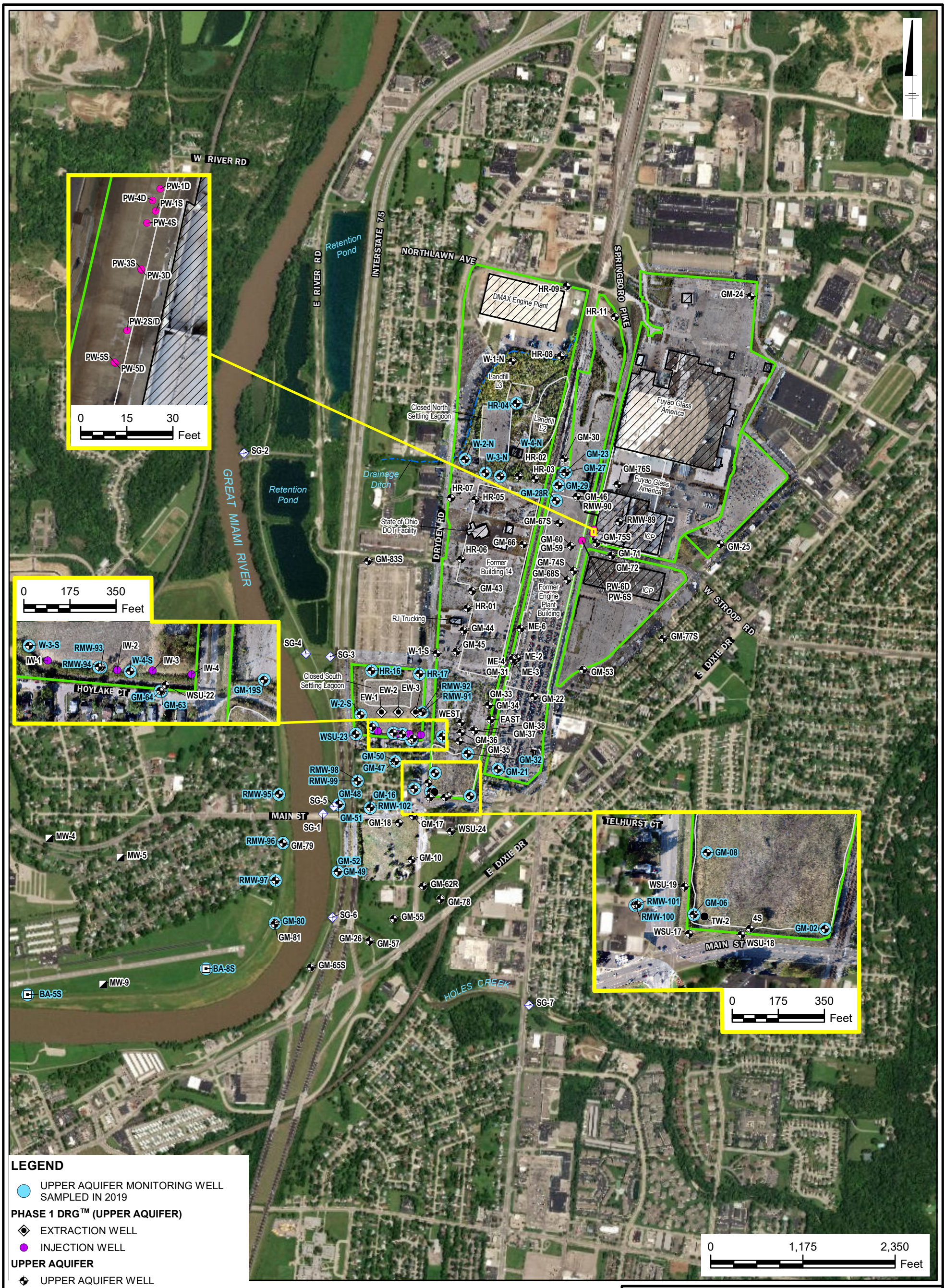
FIGURE 4

Created By: jchen Last Saved By: jchen
C:\Users\jchen\OneDrive - ARCADIS\Documents\PROJECT\RACER_MORAINE\GIS\ArcMaps\2019_GW_MonitoringRpt\Fig05_Upper Aquifer MW for GW Monitoring.mxd 02/17/2020 2:19:41 PM



LEGEND

- UPPER AQUIFER MONITORING WELL SAMPLED IN 2019

PHASE 1 DRG™ (UPPER AQUIFER)

- EXTRACTION WELL
- INJECTION WELL

UPPER AQUIFER

- UPPER AQUIFER WELL
- MONTGOMERY COUNTY PIEZOMETER
- CITY OF MORAINE MONITORING WELL
- INACTIVE RECOVERY WELL
- ERD PILOT TEST WELL
- STREAM GAUGE
- DRAINAGE DITCH
- CURRENT BUILDING
- FORMER BUILDING/SITE FEATURE
- PROPERTY BOUNDARY

Notes:
1. High-resolution orthomosaic developed using imagery collected by Arcadis US via DJI Zenmuse X4S camera mounted to a DJI Inspire 2 UAV during the dates of 10/09/2019-10/10/2019.
2. Additional Aerial Source; DigitalGlobe, dated 8/22/2018, serviced by ESRI World Imagery Service, accessed via ESRI ArcGIS Desktop on 2/17/2020.

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MORAINE, OHIO
2019 GROUNDWATER MONITORING REPORT

UPPER AQUIFER MONITORING WELLS FOR GROUNDWATER MONITORING

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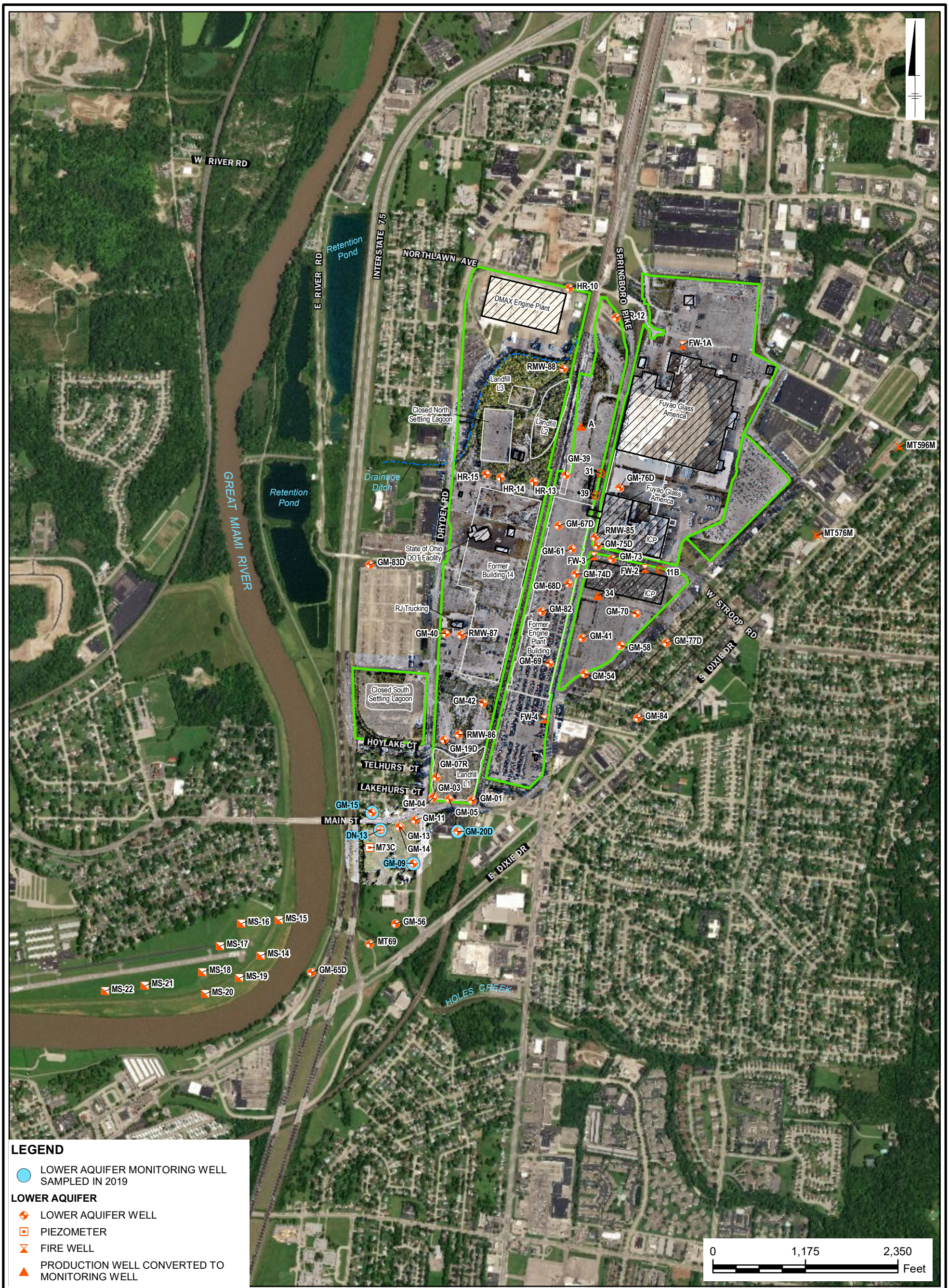
FIGURE 5

Created By: jchen Last Saved By: jchen
C:\Users\jchen\OneDrive - ARCADIS\Documents\PROJECT\RACER_MORAINE\GIS\ArcMaps\2019_GW_MonitoringRpt\Fig06_Lower Aquifer MW for GW Monitoring.mxd 02/15/2020 10:52:04 PM



LEGEND

- LOWER AQUIFER MONITORING WELL SAMPLED IN 2019

LOWER AQUIFER

- LOWER AQUIFER WELL
- PIEZOMETER
- FIRE WELL
- PRODUCTION WELL CONVERTED TO MONITORING WELL
- INACTIVE PRODUCTION WELL
- MONTGOMERY COUNTY WELL (DN-13) USED BY RACER
- MONTGOMERY COUNTY WELL (INACTIVE)
- PRIVATE WELL
- DRAINAGE DITCH
- CURRENT BUILDING
- FORMER BUILDING/SITE FEATURE
- PROPERTY BOUNDARY

0 1,175 2,350 Feet

Notes:
1. High-resolution orthomosaic developed using imagery collected by Arcadis US via DJI Zenmuse X4S camera mounted to a DJI Inspire 2 UAV during the dates of 10/09/2019-10/10/2019.
2. Additional Aerial Source; DigitalGlobe, dated 8/22/2018, serviced by ESRI World Imagery Service, accessed via ESRI ArcGIS Desktop on 2/17/2020.

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MORAINE, OHIO
2019 GROUNDWATER MONITORING REPORT

LOWER AQUIFER MONITORING WELLS FOR GROUNDWATER MONITORING

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FIGURE 6

Created By: jchen Last Saved By: jchen
C:\Users\jchen\OneDrive - ARCADIS\Documents\PROJECT\RACER_MORAINE\GIS\ArcMaps\2019_GW_MonitoringRpt\Fig07_North Settling Lagoon Upper Aquifer Potentiometric Surface Map.mxd 02/13/2020 2:02:25 PM

LEGEND

UPPER AQUIFER

- UPPER AQUIFER WELL
- DRAINAGE DITCH
- CURRENT BUILDING
- FORMER BUILDING/SITE FEATURE
- PROPERTY BOUNDARY
- POTENTIOMETRIC CONTOUR (FEET AMSL, DASHED WHERE INFERRED)

W-4-N — WELL IDENTIFIER
712.30 — GROUNDWATER ELEVATION (FEET AMSL)

Notes:
1. High-resolution orthomosaic developed using imagery collected by Arcadis US via DJI Zenmuse X4S camera mounted to a DJI Inspire 2 UAV during the dates of 10/09/2019-10/10/2019.
2. Additional Aerial Source; DigitalGlobe, dated 8/22/2018, serviced by ESRI World Imagery Service, accessed via ESRI ArcGIS Desktop on 2/15/2020.
3. Groundwater elevations were measured on July 9, 2019.
4. AMSL = Above Mean Sea Level

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MORAINE, OHIO
2019 GROUNDWATER MONITORING REPORT

CLOSED NORTH SETTLING LAGOON
UPPER AQUIFER
POTENTIOMETRIC SURFACE MAP

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FIGURE
7

Created By: jchen Last Saved By: jchen
C:\Users\jchen\OneDrive - ARCADIS\Documents\PROJECT\RACER_MORAINE\GIS\ArcMaps\2019_GW_MonitoringRpt\Fig08_South Settling Lagoon Upper Aquifer Potentiometric Surface Map.mxd 02/14/2020 10:14:02 AM

LEGEND

UPPER AQUIFER

- UPPER AQUIFER WELL
- FORMER BUILDING/SITE FEATURE
- PROPERTY BOUNDARY
- POTENTIOMETRIC CONTOUR (FEET AMSL)

GM-19S — WELL IDENTIFIER
709.83 — GROUNDWATER ELEVATION (FEET AMSL)

Notes:
1. High-resolution orthomosaic developed using imagery collected by Arcadis US via DJI Zenmuse X4S camera mounted to a DJI Inspire 2 UAV during the dates of 10/09/2019-10/10/2019.
2. Additional Aerial Source; DigitalGlobe, dated 8/22/2018, serviced by ESRI World Imagery Service, accessed via ESRI ArcGIS Desktop on 2/15/2020.
3. Groundwater elevations were measured on July 2, 2019.
4. AMSL = Above Mean Sea Level
5. NM = Not Measured

RACER TRUST
MORAINE, OHIO
2019 GROUNDWATER MONITORING REPORT

CLOSED SOUTH SETTLING LAGOON
UPPER AQUIFER
POTENTIOMETRIC SURFACE MAP

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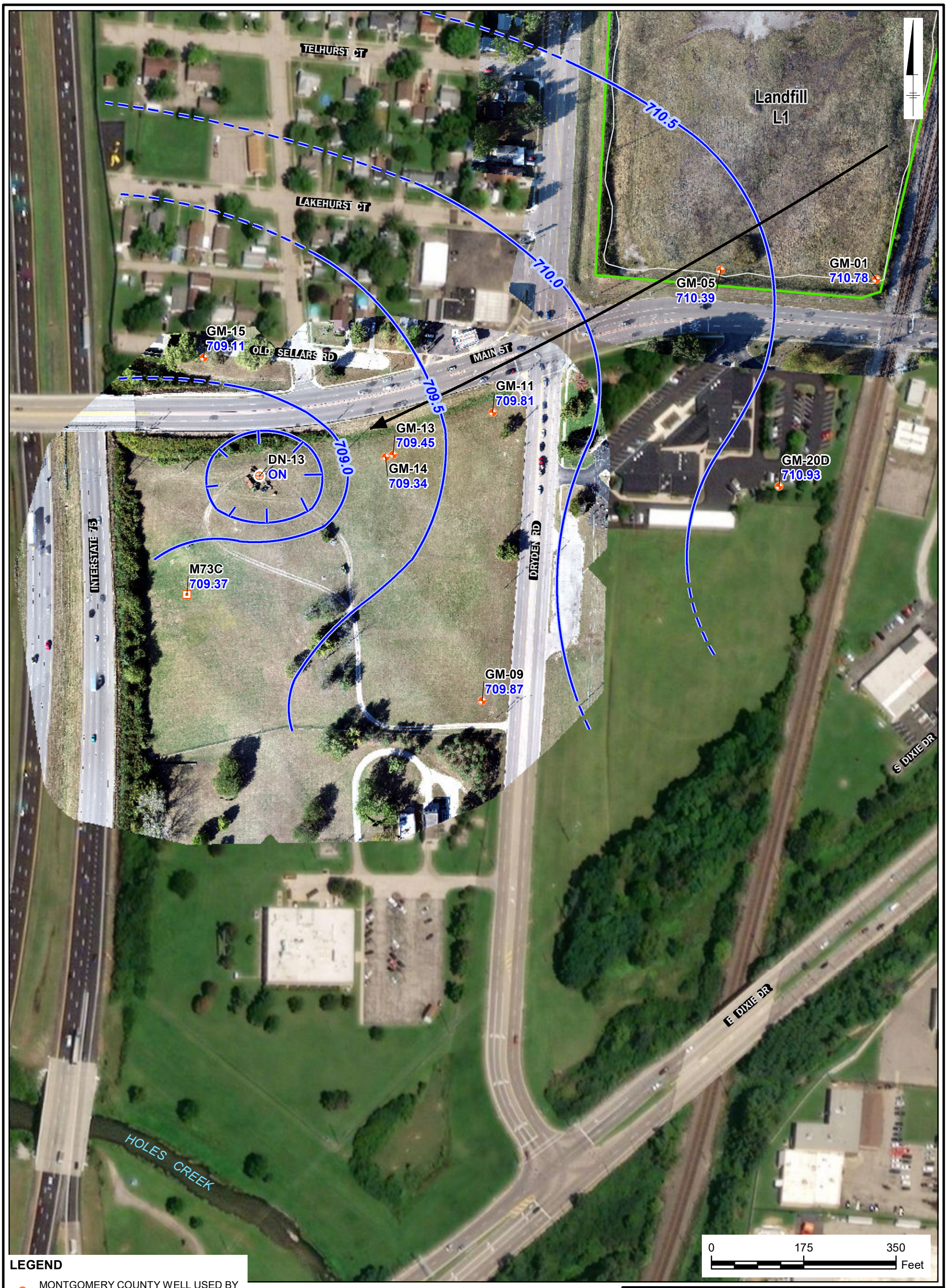
FIGURE
8

Created By: jchen Last Saved By: jchen
C:\Users\jchen\OneDrive - ARCADIS\Documents\PROJECT\RACER_MORAINE\GIS\ArcMaps\2019_GW_MonitoringRpt\Fig09_DN-13 Area Lower Aquifer Potentiometric Surface Map.mxd 02/18/2020 2:02:37 PM



LEGEND

- MONTGOMERY COUNTY WELL USED BY RACER: DN-13
- LOWER AQUIFER WELL
- PIEZOMETER
- GROUNDWATER FLOW DIRECTION
- POTENTIOMETRIC CONTOUR (FEET AMSL, DASHED WHERE INFERRED)
- FORMER BUILDING/SITE FEATURE
- PROPERTY BOUNDARY
- ESTIMATED CONE OF DEPRESSION - INDIVIDUAL CONTOURS NOT SHOWN

GM-09 — WELL IDENTIFIER
709.87 — GROUNDWATER ELEVATION (FEET AMSL)

Notes:
1. High-resolution orthomosaic developed using imagery collected by Arcadis US via DJI Zenmuse X4S camera mounted to a DJI Inspire 2 UAV during the dates of 10/09/2019-10/10/2019.
2. Additional Aerial Source; DigitalGlobe, dated 8/22/2018, serviced by ESRI World Imagery Service, accessed via ESRI ArcGIS Desktop on 2/18/2020.
3. Groundwater elevations were measured on July 2, 2019.
4. AMSL = Above Mean Sea Level
5. **ON** designates DN-13 operational at a flow rate of 596 gpm.
6. gpm = Gallons per Minute

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MORAINE, OHIO
2019 GROUNDWATER MONITORING REPORT

DN-13 AREA LOWER AQUIFER POTENTIOMETRIC SURFACE MAP

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FIGURE 9

CITY:DUBLIN DIV/GROUP:SER2 DB:R. SMITH LD:(Opt) PIC:(Opt) PM:N. GILLOTTI TM:T. FORTNER LYR:(Opt)ON=*;OFF=*REF*
C:\Users\wdberndg.ARCADIS-US\BIM 360\Arcadis\ANA - RACER TRUST\Project Files\RACER MORAINE OH\MORAINE OH 2019 ACTIVITIES\30018090\01-DWG\0003C\30018090-03C-2019-PLUMES-UPPER.dwg LAYOUT: UPPER PCE 2019 SAVED: 12/23/2019 1:35 PM ACADVER: 23.0S (LMS TECH)
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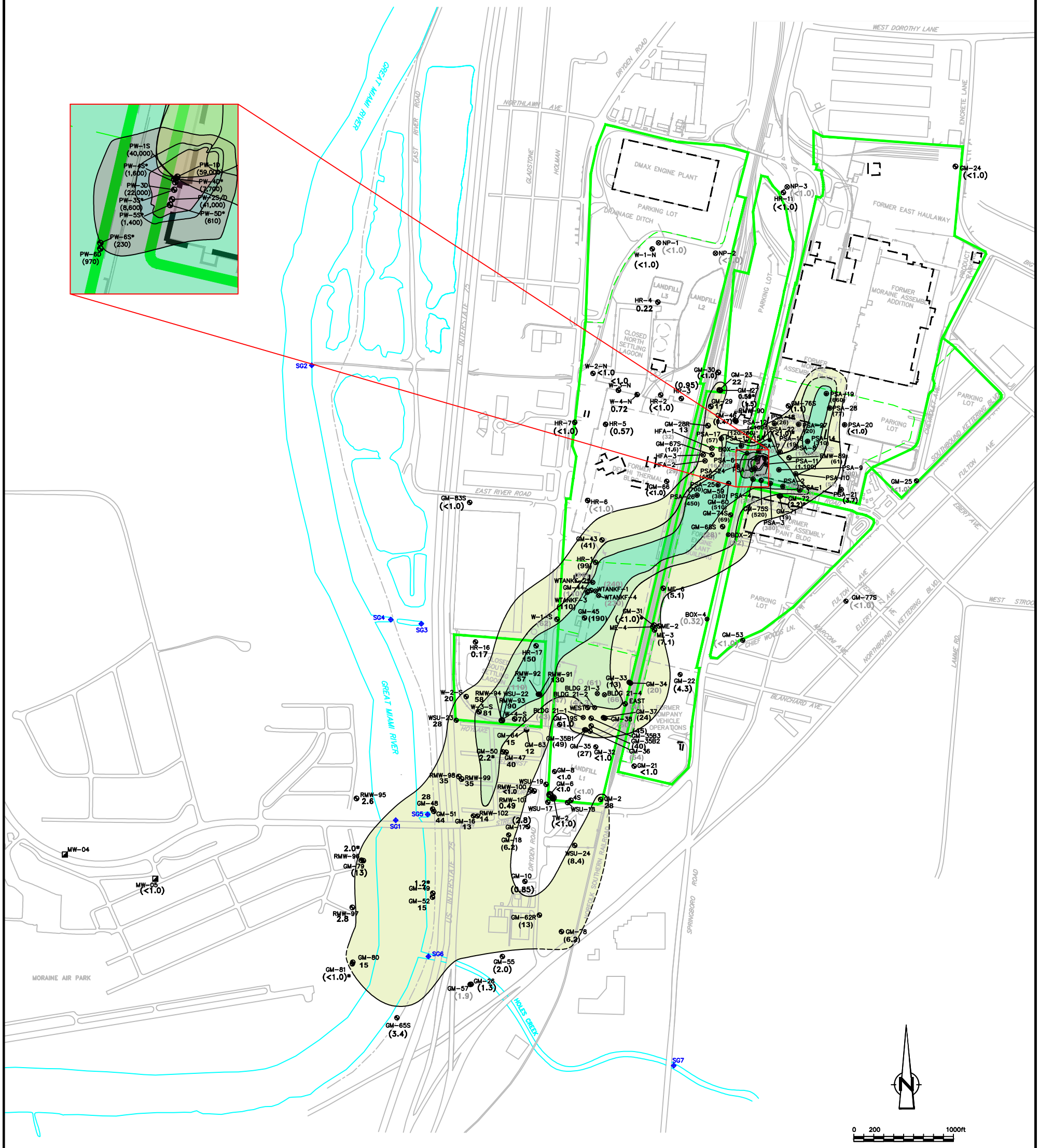

LEGEND

- MONITORING WELL (UPPER AQUIFER)
- INACTIVE EXTRACTION WELL (EW-1, EW-2, AND TW-2)
- STREAM GAUGE
- BORING LOCATION
- CITY OF MORAINE MONITORING WELL
- RIVER LEVEE
- FORMER BUILDING FOOTPRINT
- SURFACE WATER FEATURE
- PROPERTY BOUNDARY
- PARCEL BOUNDARY
- ug/L — MICROGRAMS PER LITER
- <1.0 — CONSTITUENT NOT DETECTED ABOVE LABORATORY LIMIT SHOWN
- MCL — MAXIMUM CONTAMINANT LEVEL
- <1.0 — 2019 CONCENTRATIONS
- (<1.0) — 2018–2013 CONCENTRATIONS
- (<1.0) — PRE–2013 CONCENTRATIONS
- **BOLD** — CONCENTRATION EXCEEDS MCL
- * — DATA NOT USED FOR CONTOURING PURPOSES

- >10000 ug/L
- 5000–10000 ug/L
- 1000–5000 ug/L
- 100–1000 ug/L
- 50–100 ug/L
- 5–50 ug/L

NOTE:

1. CONCENTRATIONS POSTED REFLECT 2019 MONITORING WELL RESULTS, 2018 THROUGH 2013 MONITORING WELL RESULTS, PRE–2013 MONITORING WELL RESULTS, AND MAXIMUM CONCENTRATION FROM VERTICAL AQUIFER PROFILING FROM 2011 THROUGH 2015. THE INTERPRETATION OF THE ISOCONCENTRATION INCLUDES THE CONCEPTUAL SITE MODEL UNDERSTANDING (I.E. GROUNDWATER FLOW AND INTERIM MEASURES OPERATION).
2. WHEN SAMPLE RESULT IS NON–DETECT, HALF THE REPORTING LIMIT IS HONORED WITH THE CONTOURING.
3. RELATIVE UNDERSTANDING OF PRE–2013 CONCENTRATIONS (GRAY) WAS USED TO DEVELOP THE OVERALL PLUME GEOMETRY IN THE VICINITY OF THESE WELLS.

SITE–SPECIFIC VOLATILE ORGANIC COMPOUNDS	MCL (ug/L)
1,1,1–Trichloroethane	**200**
1,1–Dichloroethane	**--**
1,1–Dichloroethene	**7**
Benzene	**5**
cis–1,2–Dichloroethene	**70**
Ethylbenzene	**700**
Tetrachloroethene	**5**
Toluene	**1000**
trans–1,2–Dichloroethene	**100**
Trichloroethene	**5**
Vinyl chloride	**2**
Xylene (total)	**10,000**

RACER TRUST
MORAINE, OHIO
2019 GROUNDWATER MONITORING REPORT

ISOCONCENTRATION MAP (UPPER AQUIFER) TETRACHLOROETHENE - 2019

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FIGURE **10**

CITY:DUBLIN DIV/GROUP:SER2 DB:R. SMITH LD:(Opt) PIC:(Opt) PM:N. GILLOTTI TM:T. FORTNER LYR:(Opt)ON=*;OFF=*REF*
C:\Users\wdberndg.ARCADIS-US\BIM 360\Arcadis\ANA - RACER TRUST\Project Files\RACER MORAINE OH\MORAINE OH 2019 ACTIVITIES\30018090\01-DWG\0003C\30018090-03C-2019-PLUMES-UPPER.dwg LAYOUT: UPPER TCE 2019 SAVED: 12/23/2019 1:35 PM ACADVER: 23.0S (LMS TECH)
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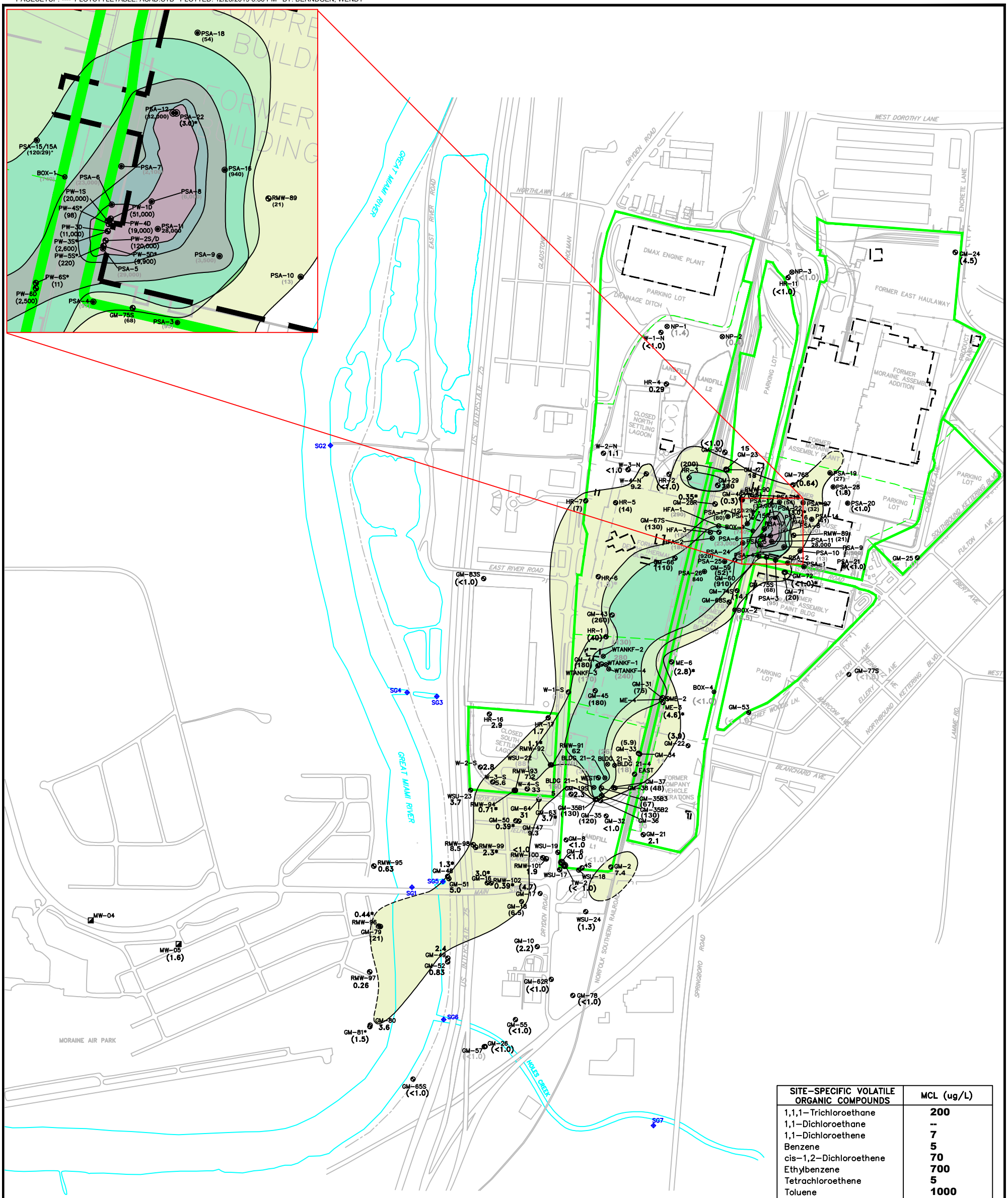


SITE-SPECIFIC VOLATILE ORGANIC COMPOUNDS	MCL (ug/L)
1,1,1-Trichloroethane	200
1,1-Dichloroethane	--
1,1-Dichloroethene	7
Benzene	5
cis-1,2-Dichloroethene	70
Ethylbenzene	700
Tetrachloroethene	5
Toluene	1000
trans-1,2-Dichloroethene	100
Trichloroethene	5
Vinyl chloride	2
Xylene (total)	10,000

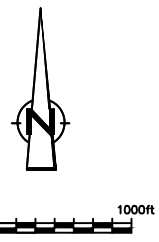
LEGEND

- MONITORING WELL (UPPER AQUIFER)
- INACTIVE EXTRACTION WELL (EW-1, EW-2, AND TW-2)
- STREAM GAUGE
- BORING LOCATION
- CITY OF MORAINE MONITORING WELL
- RIVER LEVEE
- FORMER BUILDING FOOTPRINT
- SURFACE WATER FEATURE
- PROPERTY BOUNDARY
- PARCEL BOUNDARY
- ug/L — MICROGRAMS PER LITER
- <1.0 — CONSTITUENT NOT DETECTED ABOVE LABORATORY LIMIT SHOWN
- VISL — VAPOR INTRUSION SCREENING LEVEL
- <1.0 — 2019 CONCENTRATIONS
- (<1.0) — 2018-2013 CONCENTRATIONS
- (<1.0) — PRE-2013 CONCENTRATIONS
- **BOLD** — CONCENTRATION EXCEEDS SCREENING LEVEL
- * — DATA NOT USED FOR CONTOURING PURPOSES

- >10000 ug/L
- 5000-10000 ug/L
- 1000-5000 ug/L
- 100-1000 ug/L
- 50-100 ug/L
- 5-50 ug/L

NOTE:

1. CONCENTRATIONS POSTED REFLECT 2019 MONITORING WELL RESULTS, 2018 THROUGH 2013 MONITORING WELL RESULTS, PRE-2013 MONITORING WELL RESULTS, AND MAXIMUM CONCENTRATION FROM VERTICAL AQUIFER PROFILING FROM 2011 THROUGH 2015. THE INTERPRETATION OF THE ISOCONCENTRATION INCLUDES THE CONCEPTUAL SITE MODEL UNDERSTANDING (I.E. GROUNDWATER FLOW AND INTERIM MEASURES OPERATION).
2. WHEN SAMPLE RESULT IS NON-DETECT, HALF THE REPORTING LIMIT IS HONORED WITH THE CONTOURING.
3. RELATIVE UNDERSTANDING OF PRE-2013 CONCENTRATIONS (GRAY) WAS USED TO DEVELOP THE OVERALL PLUME GEOMETRY IN THE VICINITY OF THESE WELLS.
4. SCREENING LEVELS BASED ON OHIO EPA GUIDANCE DOCUMENT: RECOMMENDATIONS REGARDING RESPONSE ACTION LEVELS AND TIMEFRAMES FOR COMMON CONTAMINANTS OF CONCERN AT VAPOR INTRUSION SITES IN OHIO – AUGUST 2016. ASSUMES SANDY SOILS. SAME EXPOSURE PARAMETERS AS THE U.S. EPA VALUES; HOWEVER OHIO GUIDANCE INCORPORATES OLDER TOXICITY DATA.



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MORAINE, OHIO
2019 GROUNDWATER MONITORING REPORT

ISOCONCENTRATION MAP (UPPER AQUIFER) TRICHLOROETHENE - 2019

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FIGURE
11

CITY:DUBLIN DIV/GROUP:SER2 DB:R. SMITH LD:(Opt) PIC:(Opt) PM:N. GILLOTTI TM:T. FORTNER LYR:(Opt)ON=*;OFF=*REF*
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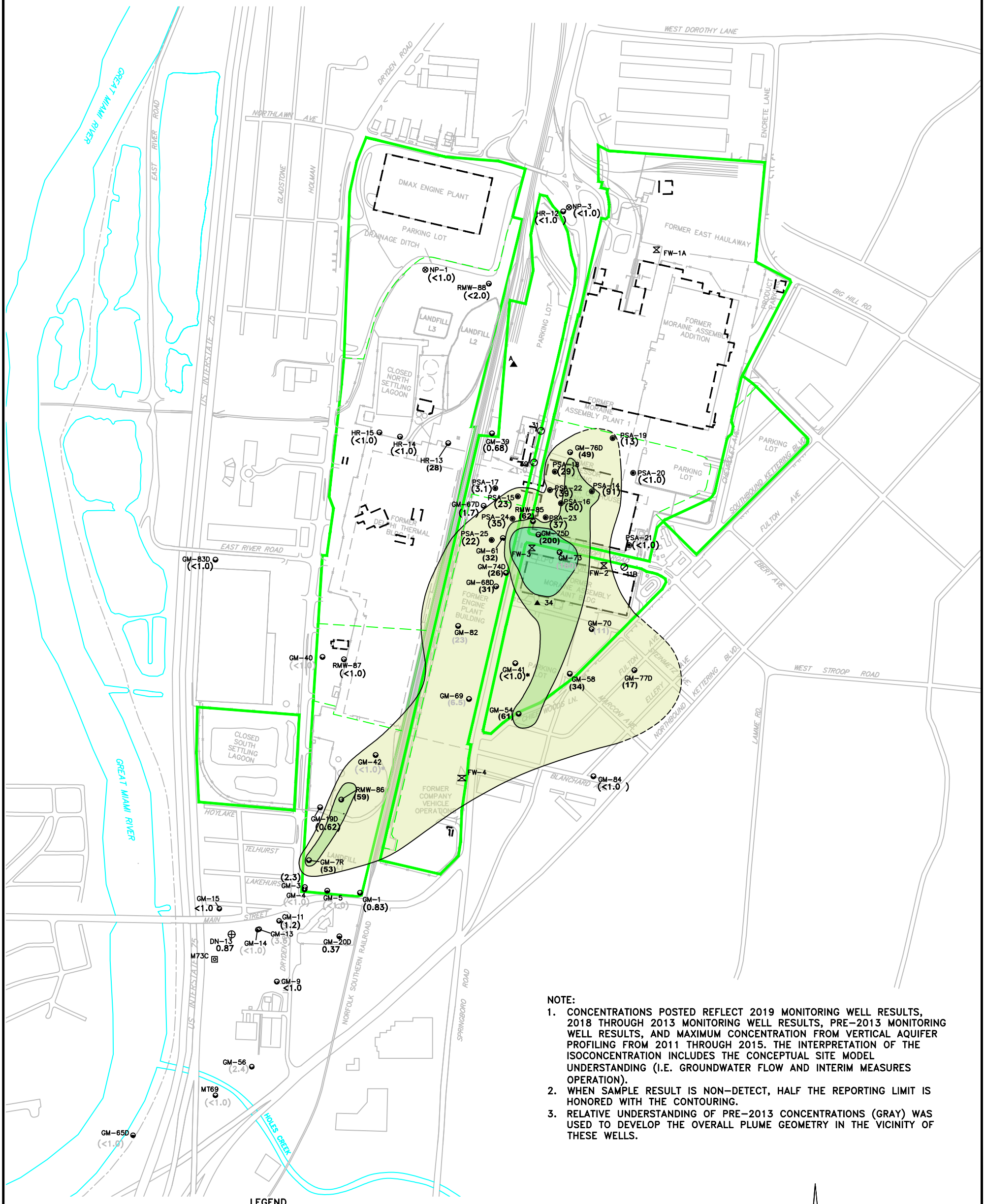

NOTE:
1. CONCENTRATIONS POSTED REFLECT 2019 MONITORING WELL RESULTS, 2018 THROUGH 2013 MONITORING WELL RESULTS, PRE–2013 MONITORING WELL RESULTS, AND MAXIMUM CONCENTRATION FROM VERTICAL AQUIFER PROFILING FROM 2011 THROUGH 2015. THE INTERPRETATION OF THE ISOCONCENTRATION INCLUDES THE CONCEPTUAL SITE MODEL UNDERSTANDING (I.E. GROUNDWATER FLOW AND INTERIM MEASURES OPERATION).
2. WHEN SAMPLE RESULT IS NON–DETECT, HALF THE REPORTING LIMIT IS HONORED WITH THE CONTOURING.
3. RELATIVE UNDERSTANDING OF PRE–2013 CONCENTRATIONS (GRAY) WAS USED TO DEVELOP THE OVERALL PLUME GEOMETRY IN THE VICINITY OF THESE WELLS.

LEGEND

- MONITORING WELL (LOWER AQUIFER)
- PIEZOMETER
- FIRE WELL
- PRODUCTION WELL CONVERTED TO MONITORING WELL (A, 34)
- INACTIVE PRODUCTION WELL
- MONTGOMERY COUNTY WELL (USED BY RACER TRUST AS A LOWER AQUIFER RECOVERY WELL)
- BORING LOCATION
- PRIVATE WELL
- RIVER LEVEE
- FORMER BUILDING FOOTPRINT
- SURFACE WATER FEATURE
- PROPERTY BOUNDARY
- PARCEL BOUNDARY
- <1.0 CONSTITUENT NOT DETECTED ABOVE LABORATORY LIMIT SHOWN
- ug/L MICROGRAMS PER LITER
- >100 ug/L
- 50–100 ug/L
- 5–50 ug/L

MCL	MAXIMUM CONTAMINANT LEVEL
<1.0	2019 CONCENTRATIONS
(<1.0)	2018–2013 CONCENTRATIONS
(<1.0)	PRE–2013 CONCENTRATIONS
BOLD	CONCENTRATION EXCEEDS MCL
*	DATA NOT USED FOR CONTOURING PURPOSES

SITE–SPECIFIC VOLATILE ORGANIC COMPOUNDS	MCL (ug/L)
1,1,1–Trichloroethane	**200**
1,1–Dichloroethane	**--**
1,1–Dichloroethene	**7**
Benzene	**5**
cis–1,2–Dichloroethene	**70**
Ethylbenzene	**700**
Tetrachloroethene	**5**
Toluene	**1000**
trans–1,2–Dichloroethene	**100**
Trichloroethene	**5**
Vinyl chloride	**2**
Xylene (total)	**10,000**

0 100 850ft

RACER TRUST
MORAINE, OHIO
2019 GROUNDWATER MONITORING REPORT

ISOCONCENTRATION MAP (LOWER AQUIFER) TETRACHLOROETHENE - 2019

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FIGURE
12

CITY:DUBLIN DIV/GROUP:SER2 DB:R. SMITH LD:(Opt) PIC:(Opt) PM:N. GILLOTTI TM:T. FORTNER LYR:(Opt)ON=*;OFF=*REF*
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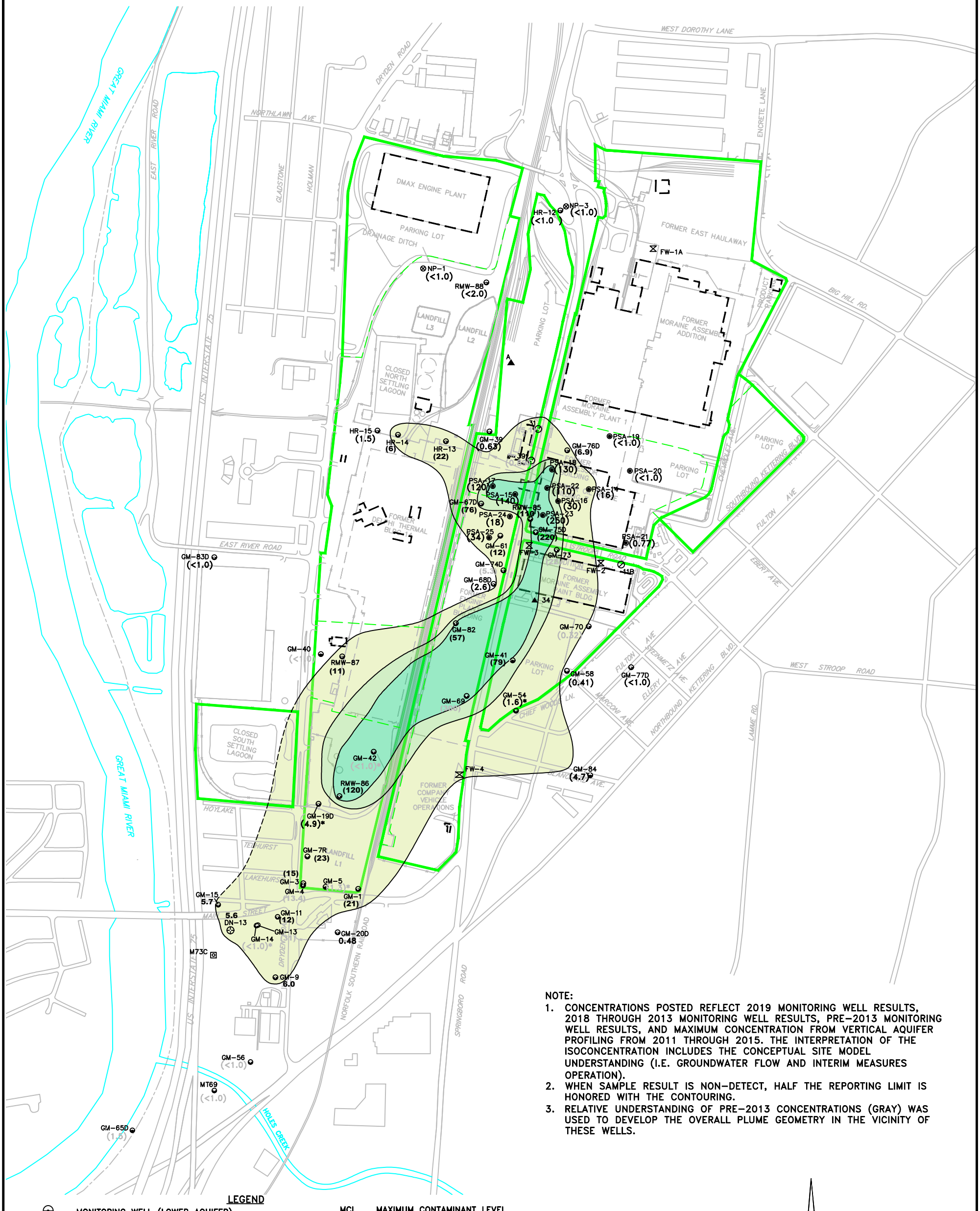

NOTE:
1. CONCENTRATIONS POSTED REFLECT 2019 MONITORING WELL RESULTS, 2018 THROUGH 2013 MONITORING WELL RESULTS, PRE-2013 MONITORING WELL RESULTS, AND MAXIMUM CONCENTRATION FROM VERTICAL AQUIFER PROFILING FROM 2011 THROUGH 2015. THE INTERPRETATION OF THE ISOCONCENTRATION INCLUDES THE CONCEPTUAL SITE MODEL UNDERSTANDING (I.E. GROUNDWATER FLOW AND INTERIM MEASURES OPERATION).
2. WHEN SAMPLE RESULT IS NON-DETECT, HALF THE REPORTING LIMIT IS HONORED WITH THE CONTOURING.
3. RELATIVE UNDERSTANDING OF PRE-2013 CONCENTRATIONS (GRAY) WAS USED TO DEVELOP THE OVERALL PLUME GEOMETRY IN THE VICINITY OF THESE WELLS.

LEGEND

- MONITORING WELL (LOWER AQUIFER)
- PIEZOMETER
- FIRE WELL
- PRODUCTION WELL CONVERTED TO MONITORING WELL (A, 34)
- INACTIVE PRODUCTION WELL
- MONTGOMERY COUNTY WELL (USED BY RACER TRUST AS A LOWER AQUIFER RECOVERY WELL)
- BORING LOCATION
- PRIVATE WELL
- RIVER LEVEE
- FORMER BUILDING FOOTPRINT
- SURFACE WATER FEATURE
- PROPERTY BOUNDARY
- PARCEL BOUNDARY
- <1.0 CONSTITUENT NOT DETECTED ABOVE LABORATORY LIMIT SHOWN
- ug/L MICROGRAMS PER LITER
- >100 ug/L
- 50–100 ug/L
- 5–50 ug/L

MCL	MAXIMUM CONTAMINANT LEVEL
<1.0	2019 CONCENTRATIONS
(<1.0)	2018–2013 CONCENTRATIONS
(<1.0)	PRE-2013 CONCENTRATIONS
BOLD	CONCENTRATION EXCEEDS MCL
*	DATA NOT USED FOR CONTOURING PURPOSES

SITE-SPECIFIC VOLATILE ORGANIC COMPOUNDS	MCL (ug/L)
1,1,1-Trichloroethane	**200**
1,1-Dichloroethane	--
1,1-Dichloroethene	**7**
Benzene	**5**
cis-1,2-Dichloroethene	**70**
Ethylbenzene	**700**
Tetrachloroethene	**5**
Toluene	**1000**
trans-1,2-Dichloroethene	**100**
Trichloroethene	**5**
Vinyl chloride	**2**
Xylene (total)	**10,000**

0 100 850ft

RACER TRUST
MORAINE, OHIO
2019 GROUNDWATER MONITORING REPORT

ISOCONCENTRATION MAP (LOWER AQUIFER) TRICHLOROETHENE - 2019

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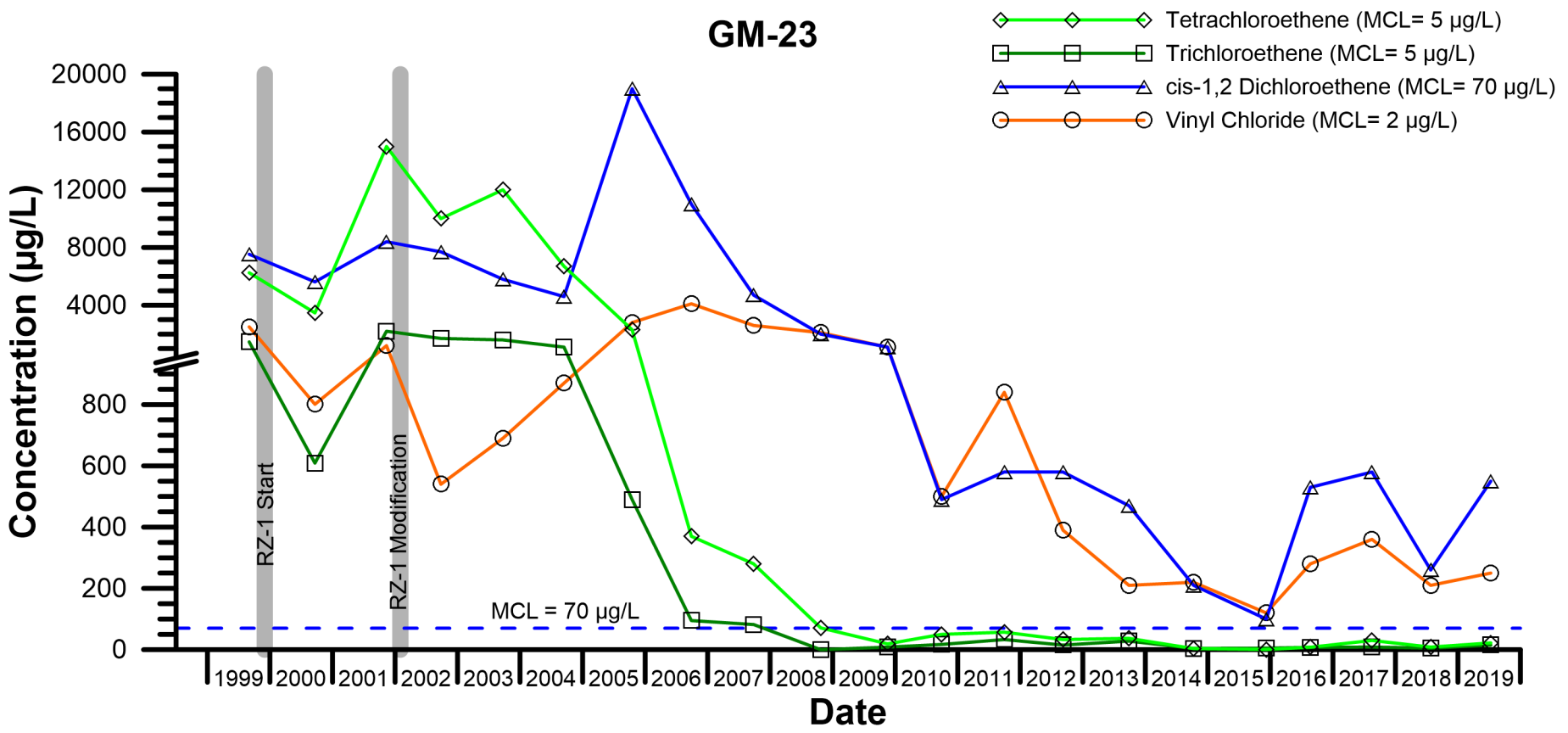
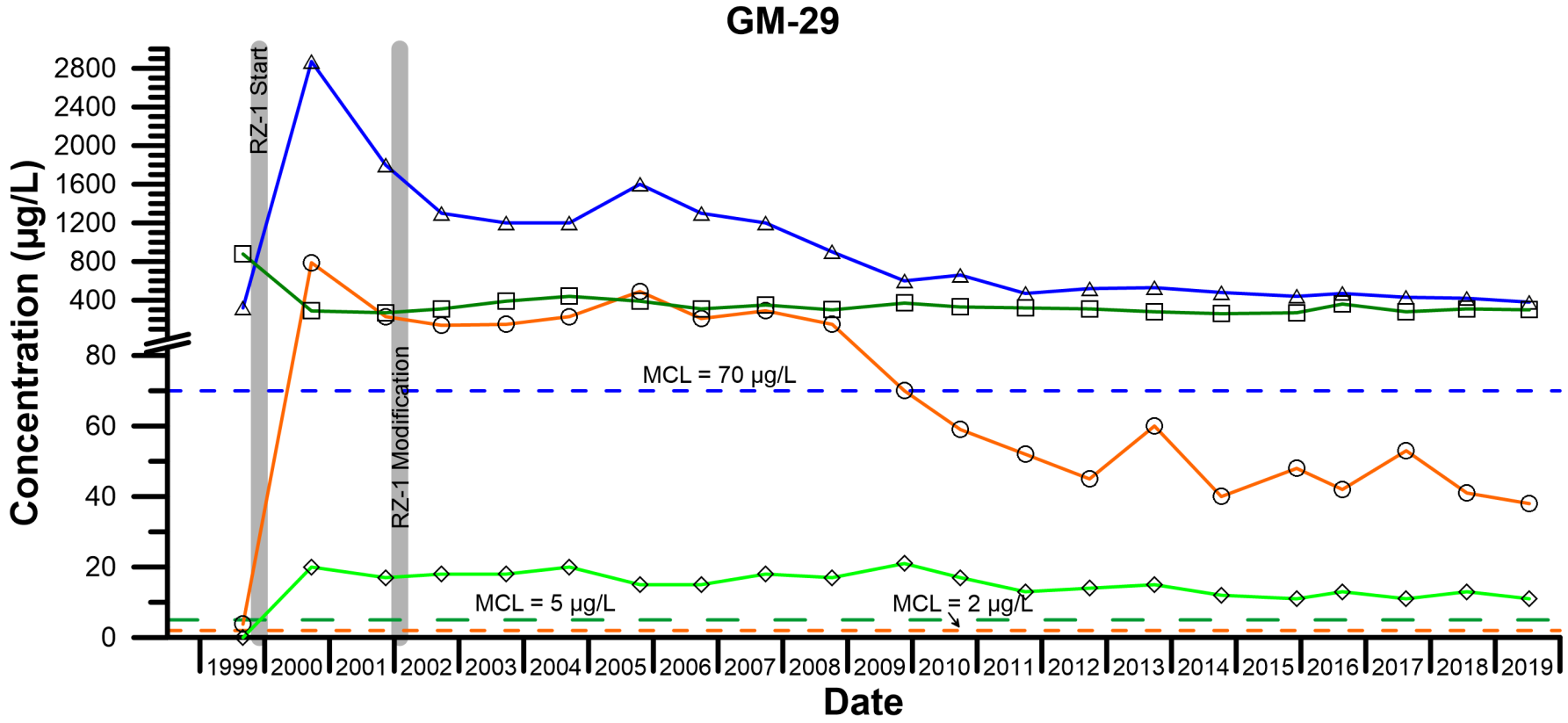
FIGURE 13

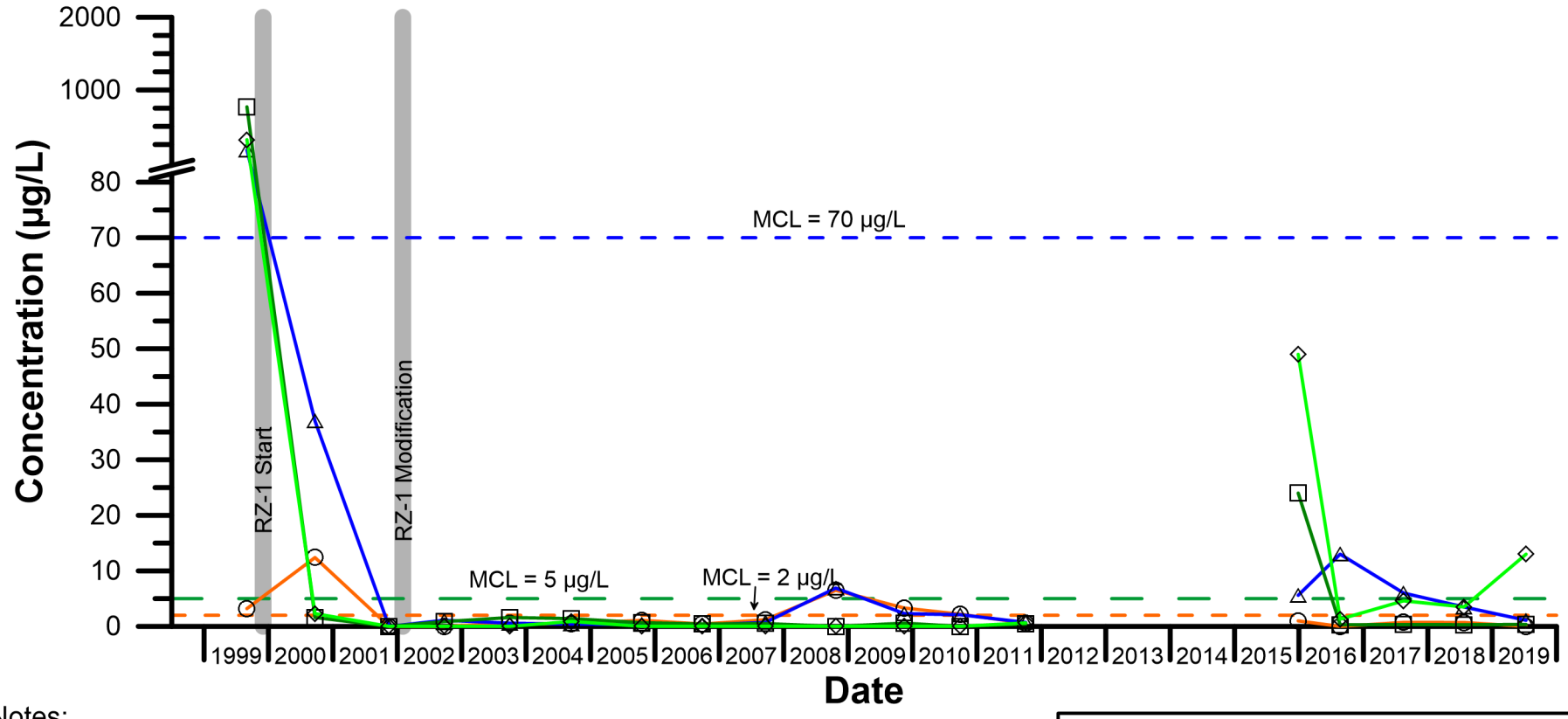
GM-23



GM-29



GM-28[1]



Notes:
MCL = Maximum Contaminant Level
µg/L = micrograms per liter

1 - Performance monitoring well GM-28 was not sampled in 2012 through 2015 due to an obstruction in the well. Monitoring well GM-28R was installed in 2015 as a replacement for GM-28.

Carbon source introductions were not completed in 2019 in RZ-1.

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RZ-1 AREA GROUNDWATER CONCENTRATION GRAPHS

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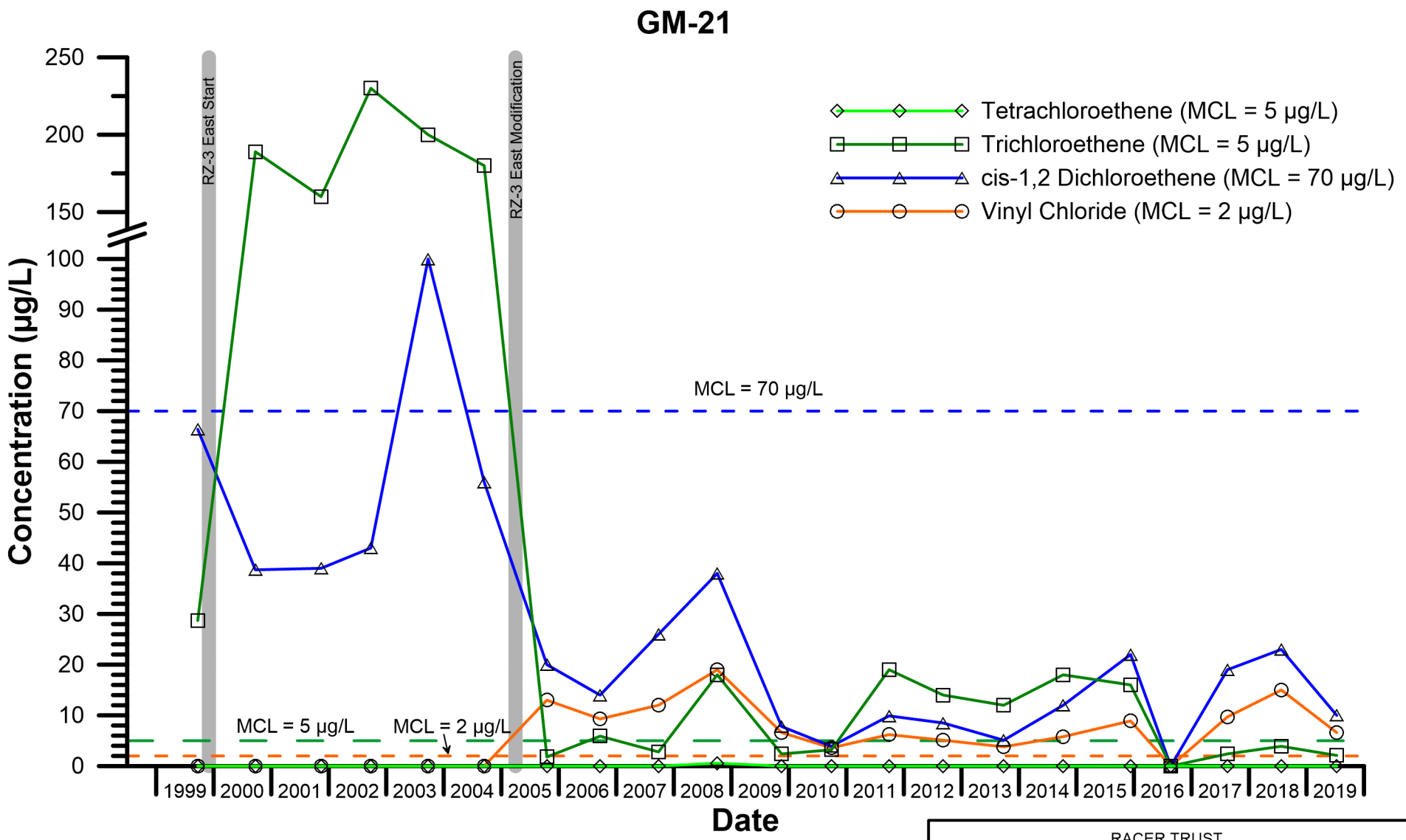
FIGURE
14



Notes:
MCL = Maximum Contaminant Level
µg/L = micrograms per liter

Carbon source introductions were not completed in 2019 in RZ-3 East.

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RZ-3 EAST AREA GROUNDWATER CONCENTRATION GRAPH

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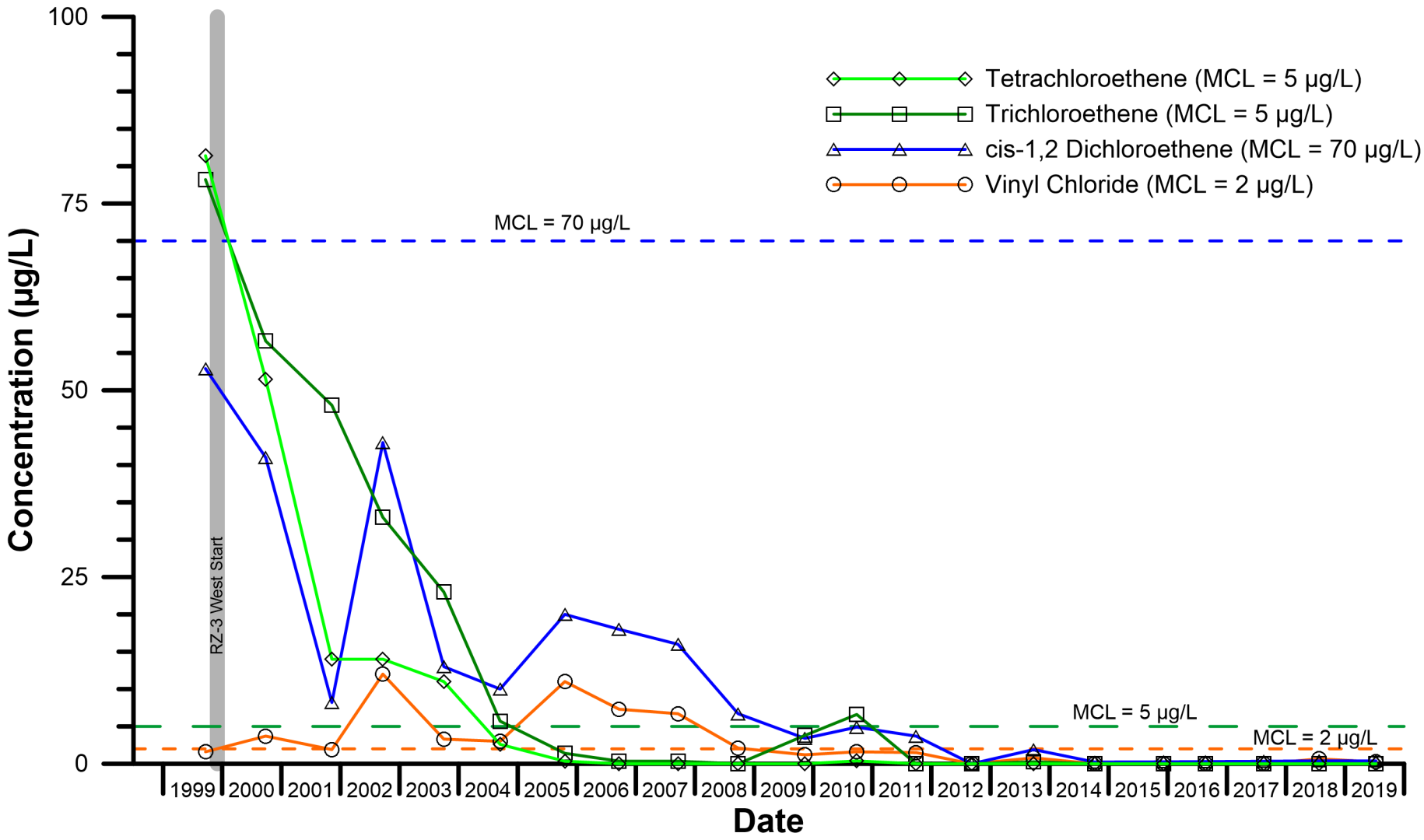
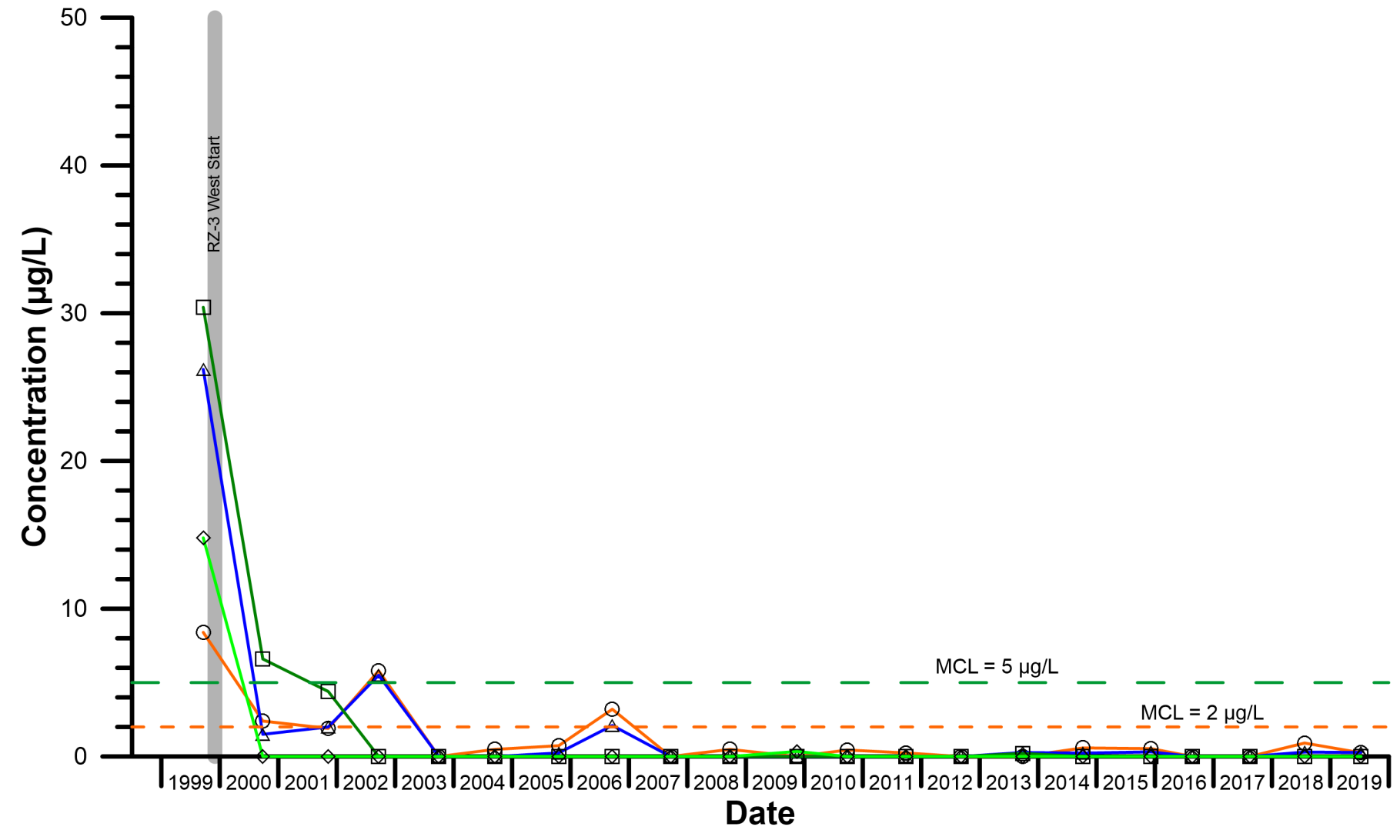
FIGURE
15

GM-6



GM-8



MCL = Maximum Contaminant Level
µg/L = micrograms per liter

Carbon source introductions were completed on March 18-22 and 25-27, 2019 in RZ-3 West.

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RZ-3 WEST AREA GROUNDWATER CONCENTRATION GRAPHS

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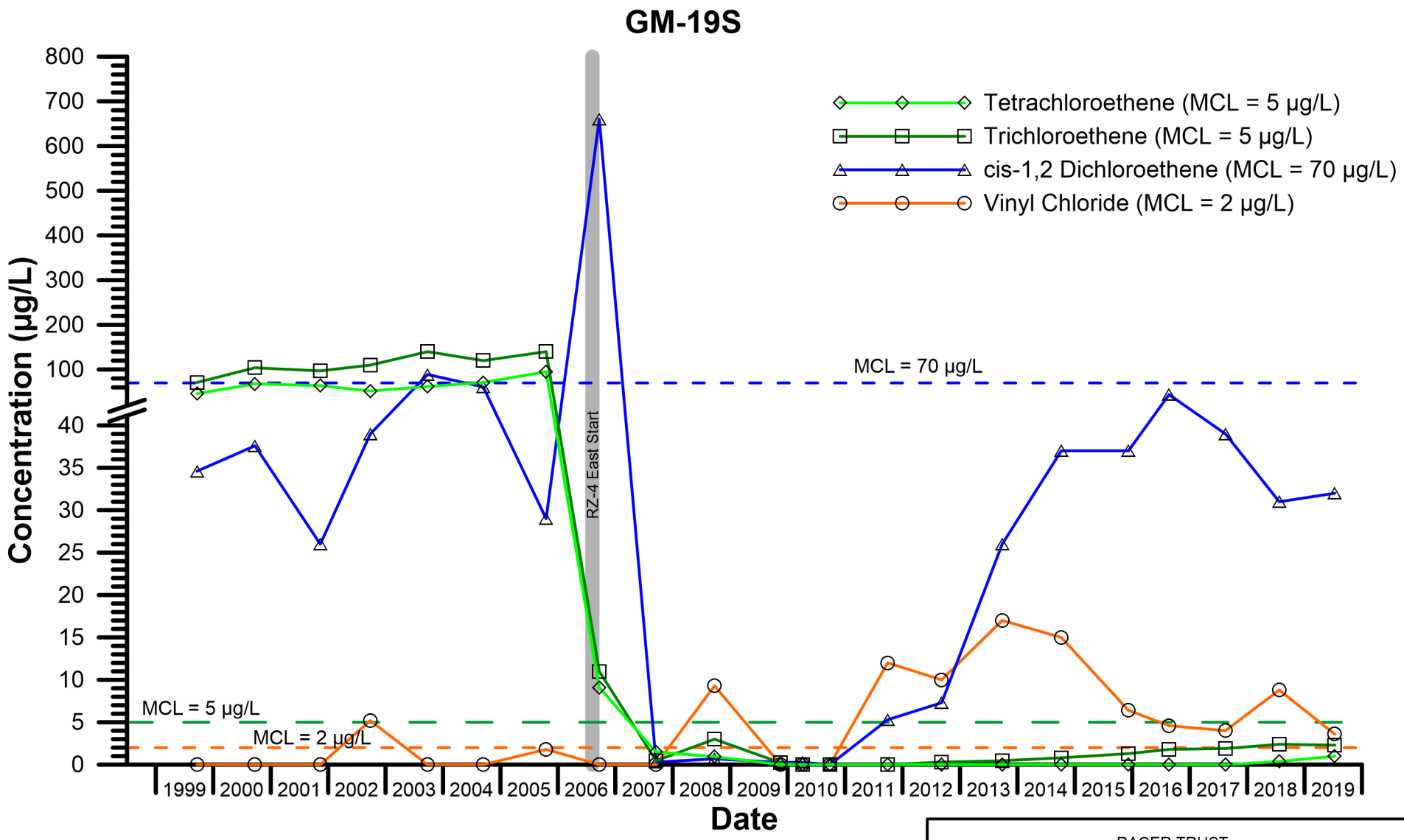
FIGURE
16



Notes:
MCL = Maximum Contaminant Level
µg/L = micrograms per liter

Carbon source introductions were not completed in 2019 in RZ-4 East.

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RZ-4 EAST AREA GROUNDWATER CONCENTRATION GRAPH

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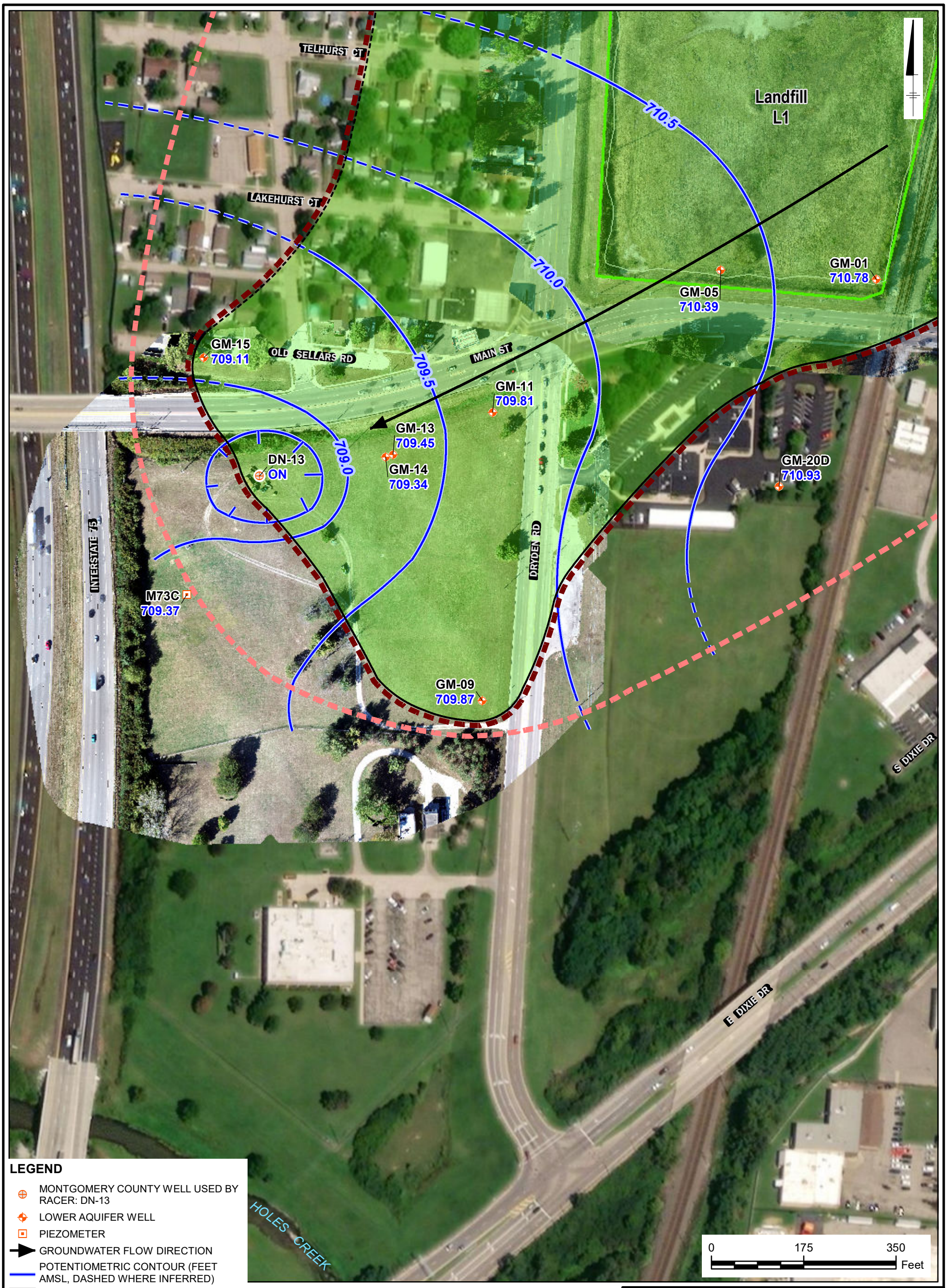
FIGURE
17

Created By: jchen Last Saved By: jchen
C:\Users\jchen\OneDrive - ARCADIS\Documents\PROJECT\RACER_MORAINE\GIS\ArcMaps\2019_GW_MonitoringRpt\Fig18_DN-13 Area Lower Aquifer Potentiometric Surface Map with Target and Inferred Capture Zones.mxd 02/18/2020 1:57:32 PM



LEGEND

- MONTGOMERY COUNTY WELL USED BY RACER: DN-13
- LOWER AQUIFER WELL
- PIEZOMETER
- GROUNDWATER FLOW DIRECTION
- POTENTIOMETRIC CONTOUR (FEET AMSL, DASHED WHERE INFERRED)
- FORMER BUILDING/SITE FEATURE
- PROPERTY BOUNDARY
- ESTIMATED CONE OF DEPRESSION - INDIVIDUAL CONTOURS NOT SHOWN
- LOWER AQUIFER TARGET CAPTURE ZONE
- DN-13 INFERRED CAPTURE ZONE
- LOWER AQUIFER TCE PLUME GREATER THAN 5 µg/L (OUTLINE DASHED WHERE INFERRED)

GM-09 — WELL IDENTIFIER
709.87 — GROUNDWATER ELEVATION (FEET AMSL)

Notes:
1. High-resolution orthomosaic developed using imagery collected by Arcadis US via DJI Zenmuse X4S camera mounted to a DJI Inspire 2 UAV during the dates of 10/09/2019-10/10/2019.
2. Additional Aerial Source; DigitalGlobe, dated 8/22/2018, serviced by ESRI World Imagery Service, accessed via ESRI ArcGIS Desktop on 2/18/2020.
3. Groundwater elevations were measured on July 2, 2019.
4. AMSL = Above Mean Sea Level
5. **ON** designates DN-13 operational at a flow rate of 596 gpm.
6. gpm = Gallons per Minute
7. TCE = Trichloroethylene
8. µg/L = Micrograms per Liter

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2019 GROUNDWATER MONITORING REPORT

DN-13 AREA LOWER AQUIFER POTENTIOMETRIC SURFACE MAP WITH TARGETED AND INFERRED CAPTURE ZONES

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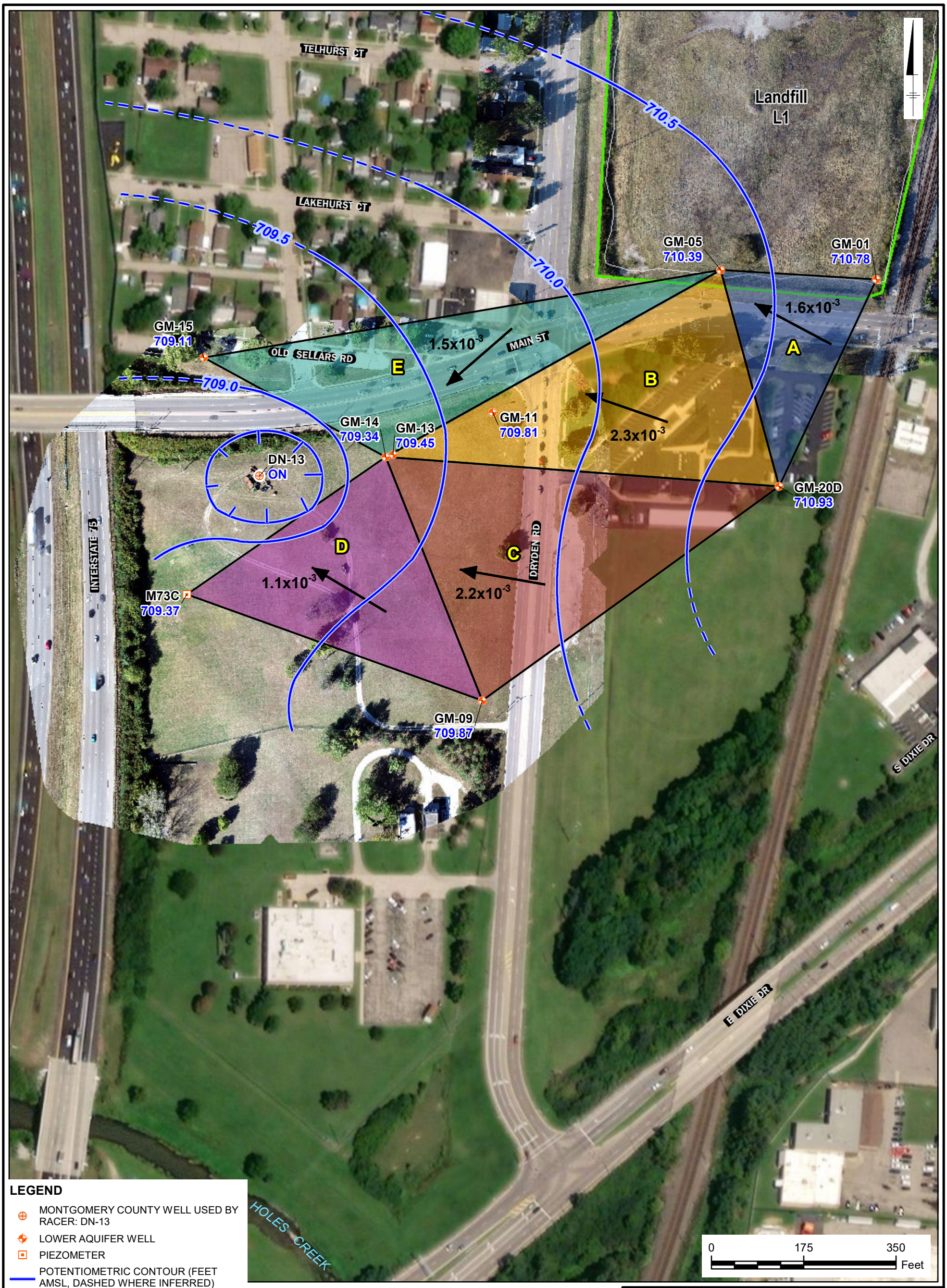
FIGURE 18

Created By: jchen Last Saved By: jchen
C:\Users\jchen\OneDrive - ARCADIS\Documents\PROJECT\RACER_MORAINE\GIS\ArcMaps\2019_GW_MonitoringRpt\Fig19_DN-13 Area Lower Aquifer Pot Surface Map with Horizontal Hydraulic Gradients.mxd 02/15/2020 11:09:27 PM



LEGEND

- MONTGOMERY COUNTY WELL USED BY RACER: DN-13
- LOWER AQUIFER WELL
- PIEZOMETER
- POTENTIOMETRIC CONTOUR (FEET AMSL, DASHED WHERE INFERRED)
- FORMER BUILDING/SITE FEATURE
- PROPERTY BOUNDARY
- ESTIMATED CONE OF DEPRESSION - INDIVIDUAL CONTOURS NOT SHOWN
- $1.1x10^{-3}$ HORIZONTAL HYDRAULIC GRADIENT DIRECTION AND MAGNITUDE
- TRIANGULAR IRREGULAR NETWORK (TIN) CELL (DIFFERENT SHADES APPLIED TO DIFFERENT CELLS)

GM-09 — WELL IDENTIFIER
709.87 — GROUNDWATER ELEVATION (FEET AMSL)

Notes:
1. High-resolution orthomosaic developed using imagery collected by Arcadis US via DJI Zenmuse X4S camera mounted to a DJI Inspire 2 UAV during the dates of 10/09/2019-10/10/2019.
2. Additional Aerial Source; DigitalGlobe, dated 8/22/2018, serviced by ESRI World Imagery Service, accessed via ESRI ArcGIS Desktop on 2/18/2020.
3. Groundwater elevations were measured on July 2, 2019.
4. AMSL = Above Mean Sea Level
5. **ON** designates DN-13 operational at a flow rate of 596 gpm.
6. gpm = Gallons per Minute
7. TCE = Trichloroethylene
8. µg/L = Micrograms per Liter

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DN-13 AREA LOWER AQUIFER POTENTIOMETRIC SURFACE MAP WITH HORIZONTAL HYDRAULIC GRADIENTS

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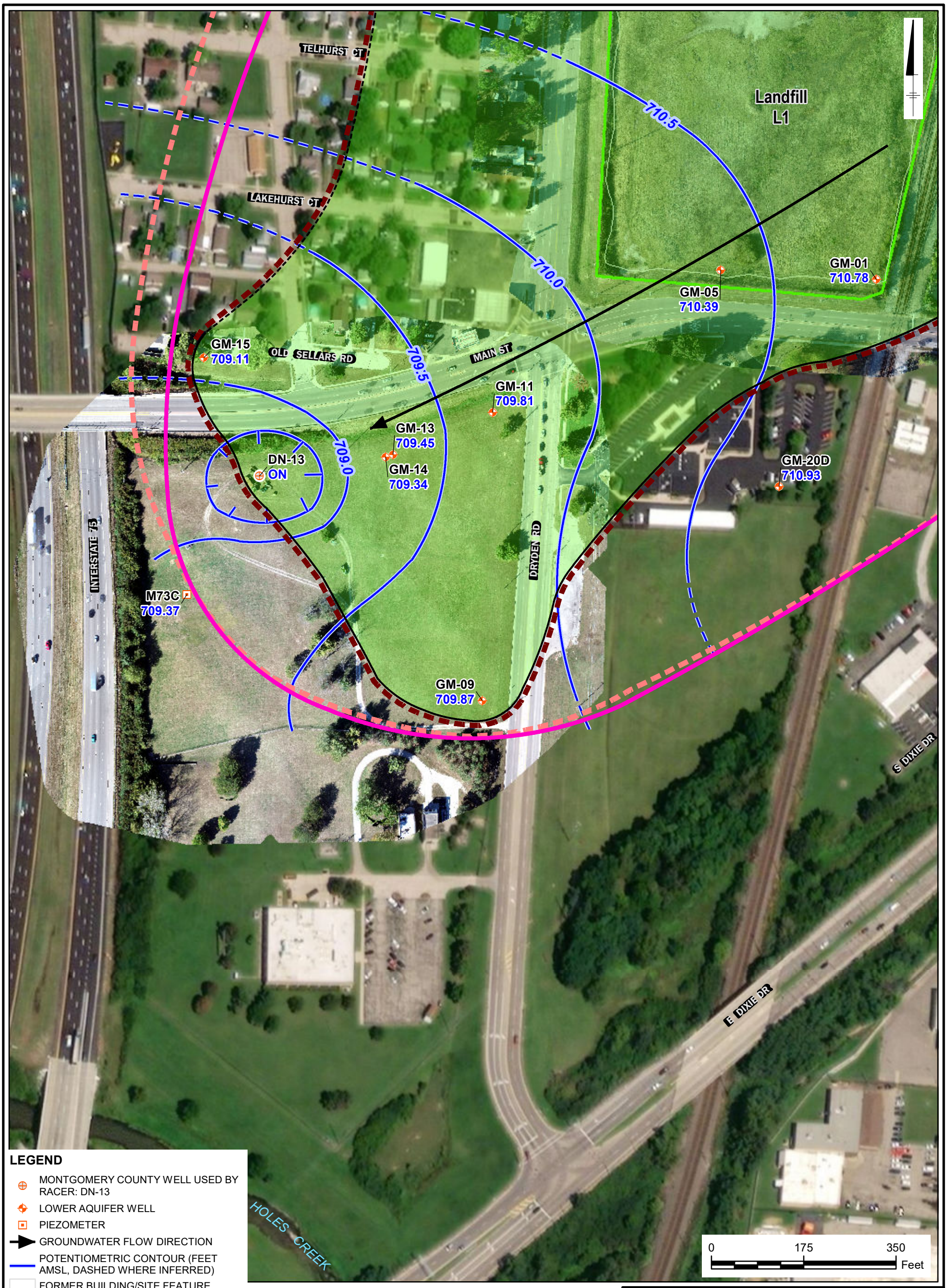
FIGURE 19

Created By: jchen Last Saved By: jchen
C:\Users\jchen\OneDrive - ARCADIS\Documents\PROJECT\RACER_MORAINE\GIS\ArcMaps\2019_GW_MonitoringRpt\Fig20_DN-13 Area Lower Aquifer Potentiometric Surface Map with Interpreted Capture Zone.mxd 02/18/2020 2:10:17 PM



LEGEND

- MONTGOMERY COUNTY WELL USED BY RACER: DN-13
- LOWER AQUIFER WELL
- PIEZOMETER
- GROUNDWATER FLOW DIRECTION
- POTENTIOMETRIC CONTOUR (FEET AMSL, DASHED WHERE INFERRED)
- FORMER BUILDING/SITE FEATURE
- PROPERTY BOUNDARY
- ESTIMATED CONE OF DEPRESSION - INDIVIDUAL CONTOURS NOT SHOWN
- DN-13 INTERPRETED CAPTURE ZONE
- LOWER AQUIFER TARGET CAPTURE ZONE
- DN-13 INFERRED CAPTURE ZONE
- LOWER AQUIFER TCE PLUME GREATER THAN 5 µg/L (OUTLINE DASHED WHERE INFERRED)

GM-09 — WELL IDENTIFIER
709.87 — GROUNDWATER ELEVATION (FEET AMSL)

Notes:
1. High-resolution orthomosaic developed using imagery collected by Arcadis US via DJI Zenmuse X4S camera mounted to a DJI Inspire 2 UAV during the dates of 10/09/2019-10/10/2019.
2. Additional Aerial Source; DigitalGlobe, dated 8/22/2018, serviced by ESRI World Imagery Service, accessed via ESRI ArcGIS Desktop on 2/18/2020.
3. Groundwater elevations were measured on July 2, 2019.
4. AMSL = Above Mean Sea Level
5. **ON** designates DN-13 operational at a flow rate of 596 gpm.
6. gpm = Gallons per Minute
7. TCE = Trichloroethylene
8. µg/L = Micrograms per Liter

RACER TRUST
MORAINE, OHIO
2019 GROUNDWATER MONITORING REPORT

DN-13 AREA LOWER AQUIFER POTENTIOMETRIC SURFACE MAP WITH INTERPRETED CAPTURE ZONE

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FIGURE 20

APPENDIX A

In-Situ Reactive Zones Performance Results for 2019

Appendix A

In-Situ Reactive Zones
Performance Results for 2019

Reactive Zone Monitoring

As detailed in the main report, the ERD process was implemented at the Site in 1999 to address impacts at the former Oil House Area and downgradient diffuse site-specific VOC concentrations at the in-situ reactive zones RZ-1, RZ-2, RZ-3 East, and RZ-3 West. RZ-4 East was designed and installed based on the data obtained from the Supplemental Groundwater Investigation completed in 2006. The in-situ reactive zones are shown on Figure 4.

Since 2006, the injection frequency at the different reactive zones has been modified or suspended based on VOC concentrations and the organic carbon degradation trend. Monitoring data collected from GM-19S, GM-21, and GM-32 during the site-wide annual sampling event in October 2014 confirmed that the ERD process has not been adversely affected as a result of the revised injection frequency. Specifically, methane, ethane, ethene, and VOC analytical data were consistent with historic data.

In 2018, injections were implemented on a quarterly basis. This frequency was continued in the first quarter of 2019 only at RZ-3 West. The “2018 Groundwater Monitoring Report” recommended that active injections be suspended on an interim basis to prepare groundwater conditions for the installation and operation of the Phase 1 DGR™ system (discussed in the main report and details of operation in Appendix H). On May 20, 2019, RACER Trust received approval from the U.S. EPA to suspend the quarterly injections at all of the reactive zones via direct email communication. Therefore, carbon source solution introductions were not completed during the second through fourth quarters of 2019. Carbon source solution injection volumes in 2019 are summarized on Table 2 of the main report.

Operation Analysis

Operation of the reactive zones was monitored through the collection of field parameter measurements and laboratory analyses of biogeochemical indicator parameters and VOCs, according to the Site-Wide Groundwater Monitoring Plan (Arcadis G&M, Inc. 2002) and as modified in subsequent annual monitoring reports. Field parameter measurements included: pH, specific conductivity, dissolved oxygen (DO), oxidation-reduction potential (ORP), and temperature. Biogeochemical parameters, collected at select monitoring wells, included manganese (total and dissolved), iron (total and dissolved), sulfate, sulfide, total organic carbon (TOC), chlorides, light hydrocarbons (ethane and ethene), and methane. The monitored site-specific VOCs included: benzene, toluene, ethylbenzene, xylenes, tetrachloroethene (PCE), trichloroethene (TCE), cis-1,2-dichloroethene (cis-1,2-DCE), vinyl chloride, 1,1,1-trichloroethane (1,1,1-TCA), 1,1-dichloroethane (1,1-DCA), 1,1-dichloroethene (1,1-DCE), and trans-1,2-dichloroethene (trans-1,2-DCE). Historical TOC data collected to evaluate organic carbon longevity within the IRZs and to review the applicable injection timing are presented in **Tables A-1** and **A-2**. The VOC data collected from the IRZ monitoring wells are presented in **Tables A-3** through **A-6** of this appendix. The bioattenuation parameter data collected from the IRZ

monitoring wells are presented in **Tables A-7** through **A-10**. An evaluation of pertinent monitoring data is presented in the following sections.

The operational monitoring data highlighted above can be broadly categorized as: (i) “primary” operational monitoring data, which tracks the actual operation of the remediation system and determines whether the operation is proceeding as planned, and (ii) “secondary” operational monitoring data, which assists in any necessary troubleshooting of the system. The secondary data becomes important in the event that degradation of the VOCs is not proceeding as expected, and the cause cannot be determined from the primary operational monitoring data. The primary operational monitoring data includes pH, TOC, VOCs, ethene, ethane, and methane. Secondary operational monitoring data includes dissolved manganese, dissolved iron, sulfate, and ORP. The primary operational data for select IRZ monitoring wells is discussed below and presented graphically on **Figures A-1** through **A-3**.

Locations of the performance monitoring wells relative to each reactive zone are shown on Figure 4 of the Monitoring Report. The following wells are used for performance monitoring of the IRZs.

- At RZ-1, monitoring wells GM-23, GM-28R, and GM-29 are used for performance monitoring. GM-23, and GM-29 are located within the area of RZ-1 expansion wells. GM-28, located downgradient of the original RZ-1 transect, was formerly used for performance monitoring, however, it is no longer sampled due to an obstruction in the well. Replacement well GM-28R was installed in 2015 and is used in this evaluation. Carbon solution was not introduced into the RZ-1 network in 2019.
- At RZ-3 West, monitoring well GM-32, which is within the introduction zone due to its location being constrained by the proximity of Landfill L1, is designated as the downgradient monitoring well. Monitoring well GM-32 is only analyzed for TOC, as this well is located in the early stages of the reactive zone due to its proximity to the introduction wells. Monitoring well GM-8 located further downgradient is utilized to monitor the performance of RZ-3 West. Additionally, downgradient well GM-6 was also utilized to confirm concentrations in the area. At RZ-3 West, carbon solution is introduced into 30 injection wells designated as RZ-3A through RZ-3DD. As stated above, carbon solution was introduced into the RZ-3 West network during the first quarter of 2019 only.
- For RZ-3 East, monitoring well GM-21 is designated as the downgradient monitor well. Additional monitoring downgradient is at GM-2. As stated above, carbon solution was not introduced into the RZ-3 East network in 2019.
- For RZ-4 East, monitoring well GM-19S is designated as the downgradient monitor well. As stated above, carbon solution was not introduced into the RZ-4 East network in 2019.

During 2019, a target volume of 800 gallons and 1,600 gallons of a 2 percent molasses solution was injected per introduction well at RZ-3 West. Injections were completed during the first quarter of 2019 in accordance with the revised injection frequency which was determined through implementation of the In-Situ Reactive Zone Interim Measure Injection Frequency Evaluation

(Arcadis, Inc. 2014). **Table A-1** is a summary of the TOC analytical results collected during the evaluation period. **Table A-2** is a summary of the half-life analysis.

Table 2 in the Monitoring Report presents the carbon source solution introduction volumes for different introduction wells in the first quarter of 2019. After the first quarter of 2019, approval was granted by the U.S. EPA to suspend injections on an interim basis in order to prepare groundwater conditions for the new Phase I DGR™ treatment approach. Therefore, no carbon source injections were completed during the second, third, or fourth quarters of 2019.

Analysis of Primary Operational Monitoring Data

The primary operational data are comprised of a limited number of variables that are monitored at a frequency necessary to supply the information required for the operation of the remediation system. The entire data set is presented in **Tables A-1** through **A-10**. **Figures A-1** through **A-3** present the primary operational data (pH, TOC, methane, VOCs, ethane, and ethene) graphically for primary monitoring wells used for monitoring the effectiveness of each of the IRZs (GM-23, GM-29, GM-28R, GM-8, GM-21, and GM-19S). The graphs are organized to allow a simple comparison of the trends in each monitoring well for pH, TOC, methane, VOCs, ethene, ethane, and total parent-daughter compound molarity. A discussion of the primary operational data is provided below.

pH

The preferred pH range for reductive dechlorination is between 6 and 8 standard units (s.u.), and the acceptable pH range extends from 5 to 9 s.u. The pH measurements collected in 2019 from performance monitoring wells were within the acceptable pH range.

Total Organic Carbon and Anaerobic Indicator Parameters

Organic carbon electron donor availability is considered the primary parameter that dictates the overall size and length of the in-situ reactive zones downgradient of each of the injection barriers. The size of the in-situ reactive zone has been historically determined based on evidence of injection influence (i.e., changes in TOC concentrations relative to the background conditions) at individual monitoring wells within each of the reactive zones. The most representative and straightforward method of assessing whether reduction-oxidation reaction conditions are appropriate for reductive dechlorination is to continue reviewing whether detectable methane is present at a given well location and using this performance metric to document that highly anaerobic groundwater conditions exist at a given well location. **Figures A-1** through **A-3** provide methane databoxes with historic concentrations in the performance monitoring wells. The observation of methane indicates that background terminal electron acceptors (e.g., dissolved oxygen, ferric iron, sulfate) have been depleted in the IRZ and that the necessary conditions for efficient reductive dechlorination have been established in the vicinity of the IRZs.

Appendix A

In-Situ Reactive Zones
Performance Results for 2019

A performance evaluation of RZ-1 was completed despite no carbon source injections completed in 2019. TOC was not monitored in RZ-1 in 2019. Methane concentrations in GM-23, GM-28R, and GM-29 (2.8, 0.74, and 3.3 milligrams per liter [mg/L], respectively) were detected and remain above the background levels observed in these monitoring wells in 1999 (i.e., sampling before the start of carbon introductions). The observed methane concentrations demonstrate that background electron acceptors are being utilized enough to foster development of highly anaerobic conditions, and indicates conditions conducive for reductive dechlorination (e.g., methanogenic) are being maintained.

The 2019 TOC concentration at RZ-3 West performance monitoring well GM-32 indicates concentrations near or below the range of the background levels (3.8 mg/L). This data is anticipated and consistent with historical data. Methane remained above background conditions at monitoring well GM-8 (2.7 mg/L). The observed methane concentration at GM-8, in spite of its considerable transport distance from the RZ-3 injection network, demonstrates that conditions conducive for reductive dechlorination are being maintained in RZ-3 West.

A performance evaluation of RZ-3 East was completed despite no carbon injections completed in 2019. TOC was not monitored in RZ-3 East in 2019. The methane concentration at RZ-3 East monitoring well GM-21 of 16 mg/L indicates conditions conducive for reductive dechlorination are being maintained as a result of the past carbon injections at RZ-3 East.

A performance evaluation of RZ-4 East was completed despite no carbon injections completed in 2019. TOC was not monitored in RZ-4 East in 2019. The concentration of methane at monitoring well GM-19S was 0.60 mg/L. The detectable methane concentrations demonstrate that influence of anaerobic conditions established within RZ-4 are observed in groundwater further downgradient.

VOC Analytical Results

The groundwater analytical data for the site-specific list of VOCs are presented in **Table A-3** for RZ-1, **Table A-4** for RZ-3 West, **Table A-5** for RZ-3 East, and **Table A-**6 for RZ-4 East. Additionally, the degradation of PCE and TCE (parent compounds) to cis-1,2-DCE, vinyl chloride (daughter products), and ethene and ethane (end products) are provided with the pH, TOC, and methane data for performance monitoring wells associated with RZ-1 (GM-23, GM-29, and GM-28R **Figure A-1**), RZ-3 East/West (GM-21 and GM-8 **Figure A-2**), and RZ-4 East (GM-19S **Figure A-3**). These figures also show a comparison of degradation end-products ethane and ethene to VOCs per performance well based on molar weight equivalence.

The following bullets summarize the observations and trends evident among the reactive zones at the Site which indicate that enhanced reduction of the targeted chlorinated VOCs is progressing as a result of the carbon introduction process:

- RZ-1 Treatment Area:

  - Total VOC concentrations in GM-23 (screened shallower in the upper aquifer) were consistent with the detected range for the past five years. The 2019 concentrations were primarily associated with cis-1,2-DCE (550 ug/L), vinyl chloride (250 ug/L), PCE (22 J ug/L), and TCE (15 J ug/L) which were above their respective MCLs. These concentrations demonstrate that transformation of the parent species to daughter products is ongoing in close proximity to this well location. This is confirmed by the observation of ethene and ethane (24 ug/L and 57 ug/L, respectively), which demonstrates that complete transformation is being achieved (**Figure A-1**).
  - The total VOC concentrations in GM-29 were consistent with the detected range for the past five years. The 2019 concentrations were primarily associated with cis-1,2-DCE (380 ug/L), TCE (300 ug/L), vinyl chloride (38 ug/L), and PCE (11 J ug/L), which were all above their respective MCLs. Concentrations of ethene and ethane were 6.2 ug/L and 100 ug/L, respectively. The observation of both daughter and end products demonstrates that complete transformation of the parent species to is being achieved.
  - Total VOC concentrations in GM-28R were consistent with the detected range for the past five years. The detected concentrations were primarily associated with PCE (13 ug/L) and cis-1,2-DCE (1.1 ug/L), with PCE concentration above the respective MCL. The concentration of ethene and ethane were 0.082 J ug/L and 0.38 ug/L, respectively.
  - Concentrations of parent compounds in the RZ-1 Treatment Area have been sustained at at least one order of magnitude below baseline conditions since approximately 2012.

- RZ-3 West Treatment Area:
  - Concentrations of total VOCs at RZ-3 West monitoring well GM-8 remained stable in 2019. These data continue to document the effectiveness of the carbon injections at RZ-3 West. All VOC concentrations were below MCLs and concentrations of ethene and ethane were 0.039 J ug/L and 64 ug/L, respectively, which demonstrate complete transformation from parent products to end products is being achieved (**Figure A-2**).
  - Additional monitoring at downgradient well GM-6 confirms these conditions with non-detections except for cis-1,2-DCE at 0.38 J ug/L.
- RZ-3 East Treatment Area:
  - Concentrations of total chlorinated VOCs at RZ-3 East monitoring well GM-21 remained stable in 2019. The 2019 concentrations were primarily associated with cis-1,2-dichloroethene (10 ug/L) which was below the MCL, and vinyl chloride (6.6 ug/L), which was above the MCL. Ethene and ethane (4.4 ug/L and 4.3 ug/L, respectively) concentrations demonstrate that complete transformation of residual VOC concentrations is being achieved (**Figure A-2**).
  - Additional monitoring at well GM-2 further downgradient has slightly increasing detections of PCE and TCE over the past 5 years and currently at 28 ug/L and 7.4

ug/L, respectively. Daughter products are also present at low concentrations to non-detect. Additional monitoring will be completed to further evaluate trends and assess the biodegradation in the area.

- Concentrations of total chlorinated VOCs at RZ-4 East monitoring well GM-19S remained stable in 2019. The 2019 concentrations were primarily associated with cis-1,2-DCE (32 ug/L). Concentrations of vinyl chloride (3.6 ug/L) were above the MCL. These concentrations indicate that only partial dechlorination has occurred at the time the amended groundwater migrates past this monitoring well.

Conclusions

The following observations and conclusions can be made:

- Aquifer conditions were strongly reducing within and downgradient of the reactive zones due to the introduction of carbohydrate, as evidenced by the presence of dissolved phase methane.
- The target compounds (PCE and TCE) were reduced to daughter products (cis-1,2-DCE and vinyl chloride) and ultimately to end products (ethene and ethane) based on the VOC and light hydrocarbon data.
- No significant change in anaerobic conditions (e.g., the concentration of methane) or treatment effectiveness (e.g., sustained reductions in chlorinated VOC concentrations with the observation of elevated ethene and/or ethane) were observed as a result of the temporary suspension of injections after the first quarter of 2019.

The 2020 IRZ performance monitoring program will be similar to the 2019 program and will be completed on a semi-annual basis. The data will be reviewed semi-annually to determine if there is a significant rebound in VOC concentrations to the extent that the conceptual design of the diffuse groundwater plume treatment system would significantly change without the interim IRZ program. If concentrations increase to the extent that changes to the remedial design for the diffuse VOC plume become likely, the IRZ program may be resumed. If the overall changes to the site-specific VOC data indicate an immaterial effect on the diffuse groundwater plume system design, the IRZ program will remain suspended.

References

Arcadis, Inc. 2014. In-Situ Reactive Zone Interim Measure Injection Frequency Evaluation, RACER Trust, Moraine, Ohio. May 2014.

Arcadis Geraghty & Miller, Inc. 2002. Site-Wide Groundwater Monitoring Plan, General Motors Corporation, Moraine, Ohio. May 2002.

TABLES

Table A-1
TOC Data in the Reactive Zone
RACER Trust
Moraine, Ohio

Monitoring Location	Date	Days Since Injection	TOC (mg/L)
RZ-3D	12/11/2013	0	3200
	1/9/2014	29	940
	2/11/2014	62	720
RZ-3S	12/11/2013	0	2600
	1/9/2014	29	1800
	2/11/2014	62	980
RZ-3TT	12/11/2013	0	3600
	1/9/2014	29	1900
	2/11/2014	62	370
RZ-1E	12/11/2013	0	2800
	1/9/2014	29	560
	2/11/2014	62	420
RZ-4E	12/11/2013	0	2300
	1/9/2014	29	1300
	2/11/2014	62	840

NOTES:

mg/L - Milligrams per Liter.

TOC - Total Organic Carbon.

Table A-2
Reactive Zone TOC Decay and Required Carbon Introduction Frequency
RACER Trust
Moraine, Ohio

			Calculated Half-life	Estimated Days to Reach 20 mg/L from Last Sampling Date (t)[2]	Required Injection Frequency[3]
Monitoring Location	Recent Injection Date	Recent Sample Collection Date	k (day-1) [1]	(days)	(months)
RZ-3D	12/9/2013	2/11/2014	0.0237	151.20	7.17
RZ-3S	12/9/2013	2/11/2014	0.0158	308.07	12.40
RZ-3TT	12/6/2013	2/11/2014	0.037	121.62	6.29
RZ-1E	12/9/2013	2/11/2014	0.0301	129.30	6.44
RZ-4E	12/10/2013	2/11/2014	0.0162	320.55	12.79
				Average (months) =	9.02

NOTES:

(1) t = -(1/k)LN(C/C0)

C - target TOC concentration to trigger injection (i.e., 20 mg/L)

C0 - TOC cocentration from the previous sampling event

(2) Slope from k-value plots.

(3) Required injection frequency = t + days between December 2013 injection event and February 2014 TOC sampling event.

mg/L - Milligrams per Liter.

TOC - Total Organic Carbon.

Table A-3
Summary of Annual Groundwater Analytical Results from Reactive Zone 1 Wells
RACER Trust
Moraine, Ohio

RZ-1			GM-29																												
Constituents	**Units**	**MCL[1]**	**9/1/99**	**2/22/00**	**5/26/00**	**9/21/00**	**3/20/01**	**6/26/01**	**11/13/01**	**12/12/01**	**6/13/02**	**9/25/02**	**5/22/03**	**9/24/03**	**9/15/04**	**9/29/99**	**2/22/00**	**5/26/00**	**10/17/05**	**9/28/06**	**9/26/07**	**10/6/08**	**11/17/09**	**9/29/10**	**9/30/11**	**9/26/12**	**9/27/13**	**10/9/14**	**12/8/15**	**8/22/16**	**8/17/17**	**7/25/18**	**7/12/19**
Volatile Organic Compounds																																
1,1,1-Trichloroethane	ug/L	200	37.8	36.0	32.5	24.5	27.0	23.8 J	<50 U	19 J	17	16 J	<50 U	18 J	21 J	5.7	<50	<5.0	19 J	17 J	15 J	12 J	18	11 J	11 J	10 J	15	9.1 J	9.9	10	9.6	8.1	8.4 J
1,1-Dichloroethane	ug/L	--	4.3	4.1	6.3	16.6	10.8	6.3 J	<50 U	<50 U	<50 U	<40 U	<50 U	<33 U	<50 U	1.8	<50	<5.0	18 J	15 J	15 J	11 J	12	11 J	8.5 J	8.2 J	12	9.5 J	10	10	13	10	9.2 J
1,1-Dichloroethene	ug/L	7	1.3	1.1	1.6	3.1	3.5	3.0 J	<50 U	<50 U	<50 U	<40 U	<50 U	<33 U	<50 U	<50 U	<50 U	<50 U	<50 U	<33 U	<50 U	<33 U	<10 U	<20 U	<13 U	<20 U	1.7	<14 U	1.2 J	<2.0 U	1.0 J	<2.0 U	< 13 U
Benzene	ug/L	5	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 UJ	<50 U	<50 U	<50 U	<40 U	<50 U	<33 U	<50 U	<50 U	<50 U	<50 U	<50 U	<33 U	<50 U	<33 U	<10 U	<20 U	< 13 U	<20 U	0.20 J	<14 U	<1.7 U	<2.0 U	< 2.0 U	<2.0 U	< 13 U
cis-1,2-Dichloroethene	ug/L	**70**	**320**	**223**	**1,190J**	**2,871**	**2,170**	**2,050 J**	**1,800**	**1,800**	**1,600**	**1,300**	**950**	**1,200**	**1,200**	**69**	**294**	**688**	**1,600**	**1,300**	**1,200**	**900**	**600**	**660**	**470**	**520**	**530**	**480**	**440**	**470**	**430**	**420**	**380**
Ethylbenzene	ug/L	700	<1.0 U	1.4	<1.0	<1.0	<1.0 U	<1.0U J	21 J	<50 U	<50 U	<40 U	<50 U	<33 U	<50 U	<50 U	<50 U	<50 U	<50 U	<33 U	<50 U	<33 U	<10 U	<20 U	<13 U	<20 U	<1.0 U	<14 U	<1.7 U	<2.0 U	< 2.0 U	<2.0 U	< 13 U
Tetrachloroethene	ug/L	**5**	<20	**38.7**	**24.6**	**20.0**	**24.4**	**24.8 J**	**17 J**	**22 J**	**22**	**18 J**	**47J**	**18 J**	**20 J**	**252**	**<50**	**45.4**	**15 J**	**15 J**	**18 J**	**17 J**	**21 J**	**17 J**	**13**	**14 J**	**15**	**12 J**	**11**	**13**	**11**	**13**	**11 J**
Toluene	ug/L	1000	<1.0 U	<1.0 U	<1.0 U	2.2	<1.0 U	<1.0 UJ	<50 U	<50 U	<50 U	<40 U	<50 U	<33 U	<50 U	<50 U	<50 U	<50 U	<50 U	<33 U	<50 U	<33 U	<10 U	<20 U	<13 U	<20 U	<1.0 U	<14 U	<1.7 U	<2.0 U	< 2.0 U	<2.0 U	< 13 U
trans-1,2-Dichloroethene	ug/L	100	11.1	9.1	8.9	14.4	20.4	25.6 J	26	24 J	21	21	<25 U	20	21 J	3.6	<50	5	27 J	20 J	19 J	16 J	20	19 J	17	15 J	20	15	15	14	16	13	13
Trichloroethene	ug/L	**5**	**878**	**758**	**649 J**	**289**	**354**	**437 J**	**270**	**320**	**380**	**310**	**280**	**390**	**440**	**158**	**88.5**	**37.9**	**390**	**310**	**350**	**300**	**370**	**330**	**320**	**310**	**280**	**260**	**270**	**360**	**280**	**310**	**300**
Vinyl chloride	ug/L	**2**	**3.8**	1.0	1.7	**788**	**362**	**276 J**	**230**	**280**	**140**	**140**	**99**	**150**	**230**	**3.3**	**<50**	**43.1**	**490**	**210**	**290**	**150**	**70**	**59**	**52**	**45**	**60**	**40**	**48**	**42**	**53**	**41**	**38**
Xylenes	ug/L	10,000	<1.0 U	6.0	<1.0 U	<1.0 U	<1.0 U	<1.0 UJ	52	<50 U	<50 U	<40 U	<50 U	<33 U	<50 U	<1.0	<50	<5.0	<100 U	<67 U	<100 U	<67 U	<20 U	<40 U	<25 U	<40 U	<2.0 U	<29 U	<3.3 U	<4.0 U	< 4.0 U	<4.0 U	< 27 U
Total VOCs	**ug/L**		**1,256**	**1,078**	**1,915**	**4,029**	**2,972**	**2,847**	**2,416**	**2,465**	**2,180**	**1,805**	**1,376**	**1,796**	**1,932**	**493**	**382.5**	**821.5**	**2,559**	**1,887**	**1,907**	**1,406**	**1,111**	**1,107**	**892**	**922**	**934**	**826**	**805**	**919**	**814**	**815**	**760**

NOTES:
< - Constituent not detected above laboratory reporting limit shown.
(1) MCL not listed for 1,1-dichloroethene.
(2) Well GM-28R was installed on December 28, 2015.
Bold - Result above MCL.
Carbon source introductions began in December 1999.
J - Value is estimated.
MCL - Maximum Contaminant Level.
ug/L - Micrograms per Liter.
Samples collected in September and October 1999 represent baseline conditions.
UJ - Constituent not detected above laboratory reporting limit; reporting limit estimated.
U - Constituent not detected above laboratory reporting limit shown.

Table A-3
Summary of Annual Groundwater Analytical Results from Reactive Zone 1 Wells
RACER Trust
Moraine, Ohio

RZ-1			GM-23																																
Constituents	**Units**	**MCL[1]**	**9/2/99**	**2/21/00**	**5/31/00**	**9/20/00**	**3/20/01**	**6/26/01**	**11/12/01**	**12/12/01**	**6/13/02**	**9/26/02**	**5/22/03**	**9/23/03**	**9/14/04**	**10/17/05**	**9/28/06**	**9/27/07**	**10/23/08**	**11/17/09**	**9/29/10**	**9/29/99**	**2/22/00**	**5/26/00**	**9/30/11**	**9/7/12**	**9/27/13**	**10/10/14**	**12/8/15**	**8/22/16**	**8/17/17**	**7/26/18**	**7/12/19**
Volatile Organic Compounds																																			
1,1,1-Trichloroethane	ug/L	200	7.2	<50 U	< 20	2.0	3.1	1.5	<420 U	<500 U	<330 U	<400 U	< 620 U	<500 U	<500 U	<560 U	<330 U	<200 U	<62 U	<20 U	<22 U	<1.0	<50	<5.0	<20 U	<25 U	<1.0 U	<10 U	<1.0 U	<2.0 U	< 2.0 U	<1.0 U	< 40 U
1,1-Dichloroethane	ug/L		32.5	<50 U	12.8 J	16.3	17.9	3.7	<420 U	<500 U	<330 U	<400 U	< 620 U	<500 U	<500 U	<560 U	<330 U	<200 U	<62 U	5.0 J	<22 U	<1.0	<50	<5.0	<20 U	<25 U	2.6	8.4 J	15	8.6	5.4	8.0	< 40 U
1,1-Dichloroethene	ug/L	7	**17.2**	<50 U	6.6 J	5.1	**15.9**	**16.3**	<420 U	<500 U	<330 U	<400 U	< 620 U	<500 U	<500 U	<560 U	<330 U	<200 U	<62 U	<20 U	<22 U	<1.0	<50	<5.0	<20 U	<25 U	1.7	<10 U	0.47 J	1.1 J	1.4 J	0.81 J	< 40 U
Benzene	ug/L	5	1.9	<50 U	<20 U	<1.0 U	1.4	<1.0 U	<420 U	<500 U	<330 U	<400 U	< 620 U	<500 U	<500 U	<560 U	<330 U	<200 U	<62 U	<20 U	<22 U	<1.0	<50	<5.0	<20 U	<25 U	0.28 J	<10 U	0.69 J	<2.0 U	< 2.0 U	0.47 J	< 40 U
cis-1,2-Dichloroethene	ug/L	**70**	**7,530**	**10,400 D**	**4,080 J**	**5,620**	**9,640**	**11,000**	**8,400**	**7,200**	**9,900**	**7,700**	**6,800**	**5,800**	**4,600**	**19,000**	**11,000**	**4,700**	**2,000**	**1,100**	**490**	**14.8**	**306**	**161**	**580**	**580**	**470**	**210**	**100**	**530**	**580**	**260**	**550**
Ethylbenzene	ug/L	700	<1.0 U	<50	<20 U	<1.0 U	<1.0 U	<1.0 U	<420 U	<500 U	<330 U	<400 U	< 620 U	<500 U	<500 U	<560 U	<330 U	<200 U	<62 U	<20 U	<22 U	<1.0	<50	2.0	<20 U	<25 U	<1.0 U	<10 U	<1.0 U	<2.0 U	< 2.0 U	<1.0 U	< 40 U
Tetrachloroethene	ug/L	**5**	**6,250**	**7,280 J**	**6,200 J**	**3,470**	**2,910**	**8,600**	**15,000**	**14,000**	**8,400**	**10,000**	**12,000**	**12,000**	**6,700**	**2,300**	**370**	**280**	**71**	**19 J**	**50**	**91.5**	**50.5**	**17.5**	**57**	**33**	**37**	3.6 J	0.58 J	**8.0**	**30**	**8.4**	**22 J**
Toluene	ug/L	1000	<1.0 U	<50 U	<20 U	<1.0 U	<1.0 U	2.3	<420 U	<500 U	<330 U	<400 U	< 620 U	<500 U	<500 U	<560 U	<330 U	<200 U	<62 U	<20 U	<22 U	<1.0	<50	1.1J	<20 U	<25 U	<1.0 U	<10 U	<1.0 U	<2.0 U	< 2.0 U	0.16 J	< 40 U
trans-1,2-Dichloroethene	ug/L	100	54.5	118 J	39.8 J	33.2	85.5	60.8	<210 U	<250 U	<170 U	<200 U	< 310 U	< 250 U	< 250 U	<560 U	270 J	130 J	58 J	31	16 J	<1.0	<50	<5.0	21	21 J	15	20	13	18	22	16	16 J
Trichloroethene	ug/L	**5**	**1,460**	**1,350 D**	**1,480 J**	**609**	**745**	**1,780 J**	**2,200**	**2,100**	**1,900**	**1,700**	**1,500**	**1,600**	**1,100**	**490 J**	**95 J**	**82 J**	<62 U	**8.3 J**	**17 J**	**44.1**	**<50**	**13.8**	**33**	**15 J**	**28**	4.1 J	5.0	**7.6**	**8.6**	5.0	**15 J**
Vinyl chloride	ug/L	**2**	**2,500**	**2,420 J**	**140 J**	**801**	**765**	**68**	**1200**	<500 U	**810**	**540**	**1700**	**690**	**870**	**2,800**	**4,100**	**2,600**	**2,100**	**1,100**	**500**	**<1.0**	**<50**	**136.0**	**840**	**390**	**210**	**220**	**120**	**280**	**360**	**210**	**250**
Xylenes	ug/L	10,000	<1.0 U	<50 U	<20 U	<1.0 U	<1.0 U	1.4	<420 U	<500 U	<330 U	<400 U	< 620 U	<500 U	<500 U	<1100 U	< 670 U	<400 U	<120 U	<40 U	<44 U	<1.0	<50	<5.0	<40 U	<50 U	<2.0 U	<20 U	<2.0 U	<4.0 U	< 4.0 U	<2.0 U	< 80 U
Total VOCs	**ug/L**		**17,853**	**21,568**	**11,959**	**10,557**	**14,184**	**21,534**	**26,800**	**23,300**	**21,010**	**19,940**	**22,000**	**20,090**	**13,270**	**24,590**	**15,835**	**7,792**	**4,229**	**2,263**	**1,073**	**150**	**357**	**331**	**1,531**	**1,039**	**764**	**466**	**255**	**853**	**1,007**	**509**	**853**

NOTES:
< - Constituent not detected above laboratory reporting limit shown.
(1) MCL not listed for 1,1-dichloroethene.
(2) Well GM-28R was installed on December 28, 2015.
Bold - Result above MCL.
Carbon source introductions began in December 1999.
J - Value is estimated.
MCL - Maximum Contaminant Level.
ug/L - Micrograms per Liter.
Samples collected in September and October 1999 represent baseline conditions.
UJ - Constituent not detected above laboratory reporting limit; reporting limit estimated.
U - Constituent not detected above laboratory reporting limit shown.

Table A-3
Summary of Annual Groundwater Analytical Results from Reactive Zone 1 Wells
RACER Trust
Moraine, Ohio

RZ-1			GM-28																				GM-28R[2]				
Constituents	**Units**	**MCL[1]**	**9/1/99**	**2/23/00**	**5/26/00**	**9/21/00**	**3/20/01**	**6/26/01**	**11/15/01**	**12/12/01**	**7/21/02**	**9/24/02**	**5/23/03**	**10/1/03**	**4/30/04**	**9/15/04**	**10/18/05**	**9/27/06**	**9/20/07**	**10/22/08**	**11/16/09**	**9/28/10**	**10/5/11**	**12/28/15**	**8/22/16**	**8/17/17**	**7/25/18**	**7/12/19**
Volatile Organic Compounds																											
1,1,1-Trichloroethane	ug/L	200	17.7	23.2	18.1	5.0	<1.0 U	<1.0 U	<10 U	<5.0 UJ	<4.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	< 5 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	< 1.0 U	<1.0 U	< 1.0 U
1,1-Dichloroethane	ug/L		3.3	4.2	11.8	9.9	<1.0 U	<1.0 U	<10 U	<5.0 UJ	<4.0 U	2.7	4.2	3.3	3.5	3.3	4.0	4.2	4.6	2.2 J	3.6	4.6	2.1	0.55 J	<1.0 U	0.25 J	<1.0 U	< 1.0 U
1,1-Dichloroethene	ug/L	7	<1.0 U	<1.0 U	3.8	<1.0 U	<1.0 U	<1.0 U	<10 U	<5.0 UJ	<4.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	< 5 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	< 1.0 U	<1.0 U	< 1.0 U
Benzene	ug/L	5	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<10 U	<5.0 UJ	<4.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	< 5 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	< 1.0 U	<1.0 U	< 1.0 U
cis-1,2-Dichloroethene	ug/L	**70**	**175**	**503**	**2,700**	37.0	7.7	**352**	<5.0 U	<2.2 UJ	<2.0 U	1.1	0.66	0.58	0.45 J	0.41 J	0.32 J	0.26 J	0.72 J	6.9	2.3	2.1	0.72 J	5.6	13	6.0	3.5	1.1
Ethylbenzene	ug/L	700	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<10 U	<5.0 UJ	<4.0 U	<1.0 U	<1.0 U	0.28 J	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	< 5 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	< 1.0 U	<1.0 U	< 1.0 U
Tetrachloroethene	ug/L	**5**	**316**	**88.4**	**30.2**	2.3	2.8	<1.0 U	<10 U	<5.0 UJ	<4.0 U	<1.0 U	0.95 J	<1.0 U	<1.0 U	0.88 J	<1.0 U	<1.0 U	<1.0 U	< 5 U	<1.0 U	<1.0 U	0.63 J	**49**	1.3	4.6	3.5	**13**
Toluene	ug/L	1000	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<10 U	<1.8UJ	<4.0 U	<1.3	1.0	1.0	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	< 5 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	< 1.0 U	<1.0 U	< 1.0 U
trans-1,2-Dichloroethene	ug/L	100	9.2	9.7	36.5	22.3	17.6	<1.0 U	11	11 J	8.6	11	9.2	4.0	2.2	1.2	0.63 J	0.66 J	0.58 J	1.3 J	1.7	1.5	0.69 J	0.38 J	0.31 J	< 1.0 U	<1.0 U	< 1.0 U
Trichloroethene	ug/L	**5**	**768**	**833**	**14.8**	1.6	1.8	<1.0 U	<10 U	<5.0 UJ	<4.0 U	0.86J	3.1	1.6	1.6	1.4	0.66 J	0.43 J	0.51 J	< 5 U	0.58 J	<1.0 U	0.41 J	**24**	0.29 J	0.33 J	0.30 J	0.35 J
Vinyl chloride	ug/L	**2**	**3.2**	<1.0 U	1.9	**12.4**	**2.6**	<1.0 U	<10 U	<5.0 UJ	<4.0 U	<1.0 U	<1.0 U	0.53 J	<1.0 U	0.44 J	1.1	0.42 J	1.2	**6.5**	**3.3**	**2.2**	0.57 J	0.99 J	<1.0 U	0.72 J	0.70 J	< 1.0 U
Xylenes	ug/L	10,000	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<10 U	<5.0 UJ	<4.0 U	<1.2 U	0.87 J	1.6	<1.0 U	<1.0 U	<2.0 U	<2.0 U	<2.0 U	<10 U	<2.0 U	<2.0 U	<2.0 U	<2.0 U	<2.0 U	< 2.0 U	< 2.0 U	< 2.0 U
Total VOCs	**ug/L**		**1,292**	**1,462**	**2,817**	**90.5**	**32.5**	**352**	**11.0**	**11.0**	**8.60**	**15.7**	**20.0**	**12.9**	**7.75**	**7.63**	**6.71**	**5.97**	**7.61**	**16.9**	**11.5**	**10.4**	**5.12**	**80.5**	**14.9**	**11.9**	**8.0**	**14.5**

NOTES:
< - Constituent not detected above laboratory reporting limit shown.
(1) MCL not listed for 1,1-dichloroethene.
(2) Well GM-28R was installed on December 28, 2015.
Bold - Result above MCL.
Carbon source introductions began in December 1999.
J - Value is estimated.
MCL - Maximum Contaminant Level.
ug/L - Micrograms per Liter.
Samples collected in September and October 1999 represent baseline conditions.
UJ - Constituent not detected above laboratory reporting limit; reporting limit estimated.
U - Constituent not detected above laboratory reporting limit shown.

Table A-4
Summary of Annual Groundwater Analytical Results from Reactive Zone 3 West Wells
RACER Trust
Moraine, Ohio

RZ-3 West			GM-8																				
Constituents	**Units**	**MCL[1]**	**3/6/98**	**9/20/99**	**9/26/00**	**11/9/01**	**9/20/02**	**10/1/03**	**9/14/04**	**10/19/05**	**9/19/06**	**9/18/07**	**9/23/08**	**11/16/09**	**9/27/10**	**9/29/11**	**9/6/12**	**9/26/13**	**10/7/14**	**12/8/15**	**8/22/16**	**8/16/17**	**7/24/18**	**7/11/19**
Volatile Organic Compounds																							
1,1,1-Trichloroethane	ug/L	200	6.7	1.9	<1.0 U	0.40 J	<2.0 U	<2.0 U	<1.0 U	<1.0 U	<5.0 U	<2.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	< 1.0 U
1,1-Dichloroethane	ug/L	--	49.3	30.2	36.5	40	63	48	15	16	18	9.1	1.7	2.9	3.0	1.9	0.66 J	0.88 J	0.59 J	0.43 J	0.37 J	.44 J	0.47 J	0.40 J
1,1-Dichloroethene	ug/L	7	1.0	<1.0 U	<1.0 U	<1.0 U	<2.0 U	<2.0 U	<1.0 U	<1.0 U	<5.0 U	<2.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	< 1.0 U
Benzene	ug/L	5	2.3	3.4	1.1	0.78 J	**5.5**	**5.4**	4.2	3.5	2.1 J	2.4	**6.8**	3.9	4.7	3.5	3.5	1.9	1.2	<1.0 U	0.79 J	0.86 J	1.3	1.6
cis-1,2-Dichloroethene	ug/L	70	56.1	26.2	1.5	2.0	5.5	<1.0 U	<0.5 U	0.24 J	2.1 J	<2.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	0.27 J	0.23 J	0.31 J	<1.0 U	<1.0 U	0.30 J	0.27 J
Ethylbenzene	ug/L	700	28.9	20.7	12.5	0.40 J	7.5	11	19	29	<5.0 U	1.7 J	8.6	5.5	0.33 J	5.4	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	< 1.0 U
Tetrachloroethene	ug/L	5	**20.0**	**14.8**	<1.0 U	<1.0 U	<2.0 U	<2.0 U	<1.0 U	<1.0 U	<5.0 U	<2.0 U	<1.0 U	0.34 J	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	< 1.0 U
Toluene	ug/L	1000	<1.0 U	<1.0 U	<1.0 U	<1.0 U	1.8 J	1.2 J	<1.0 U	0.39 J	<5.0 U	<2.0 U	<1.0 U	0.13 J	0.18 J	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	< 1.0 U
trans-1,2-Dichloroethene	ug/L	100	10.1	12.0	5.4	3.6	9	4.4	1.1	0.99 J	1 J	0.9 J	0.27 J	0.22 J	0.29 J	0.20 J	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	< 1.0 U
Trichloroethene	ug/L	5	**95.2**	**30.4**	**6.6**	4.4	<2.0	<2.0 U	<1.0 U	<1.0 U	<5.0 U	<2.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	0.21 J	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	< 1.0 U
Vinyl chloride	ug/L	2	**10.1**	**8.4**	**2.4**	1.9	**5.8**	<2.0 U	0.48 J	0.73 J	3.2 J	<2.0 U	0.48 J	<1.0 U	0.44 J	0.24 J	<1.0 U	< 1.0 U	0.58 J	0.53 J	<1.0 U	<1.0 U	0.91 J	0.25 J
Xylenes	ug/L	10,000	10.3	2.3	1.9	0.39 J	1.5 J	2.0	1.1	<2.0 U	<10 U	0.9 J	3.9	1.3 J	<2.0 U	0.99 J	<2.0 U	<2.0 U	<2.0 U	<2.0 U	<2.0 U	0.31 J	<2.0 U	< 2.0 U
Total VOCs	**ug/L**		**290**	**150**	**67.9**	**53.9**	**99.6**	**72**	**40.9**	**50.9**	**26.4**	**15**	**21.8**	**14.3**	**8.94**	**12.2**	**4.16**	**3.26**	**2.60**	**1.27**	**1.16**	**1.61**	**2.98**	**2.52**

NOTES:
< - Constituent not detected above laboratory reporting limit shown.
(1) MCL not listed for 1,1-dichloroethene.
Bold - Result above MCL.
Carbon source introductions began in December 1999.
J - Value is estimated.
MCL - Maximum Contaminant Level.
ug/L - Micrograms per Liter.
Samples collected in September and October 1999 represent baseline conditions.
UJ - Constituent not detected above laboratory reporting limit; reporting limit estimated.
U - Constituent not detected above laboratory reporting limit shown.

Table A-4
Summary of Annual Groundwater Analytical Results from Reactive Zone 3 West Wells
RACER Trust
Moraine, Ohio

RZ-3 West			GM-6																				
Constituents	**Units**	**MCL[1]**	**3/6/98**	**9/20/99**	**9/26/00**	**11/9/01**	**9/20/02**	**10/2/03**	**9/14/04**	**10/19/05**	**9/19/06**	**9/18/07**	**9/24/08**	**11/11/09**	**9/27/10**	**9/29/11**	**9/6/12**	**9/25/13**	**10/7/14**	**12/8/15**	**8/22/16**	**8/16/17**	**7/24/18**	**7/11/19**
Volatile Organic Compounds																							
1,1,1-Trichloroethane	ug/L	200	36.2	24.6	12.1	3.9	1.4J	0.19J	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
1,1-Dichloroethane	ug/L	--	35.3	33.2	13.0	14	60	20	18	21	16	26	< 8.4 U	6.9	6.2	4.5	< 1.0 U	0.66 J	0.36 J	<1.0 U	<1.0 U	< 1.0 U	0.26 J	0.23 J
1,1-Dichloroethene	ug/L	7	<1.0 U	1.2	<1.0 U	<2.0 U	<2.0 U	<1.0 U	< 1 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Benzene	ug/L	5	<1.0 U	<1.0 U	<1.0 U	<2.0 U	2.2	1.0	1.7	0.49 J	<1.0 U	0.42 J	1.2	1.3	1.1	1.0	2.5	<1.0 U	<1.0 U	<1.0 U	<1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
cis-1,2-Dichloroethene	ug/L	70	**82.4**	52.9	41.0	8.2	43	13	10	20	18	16	6.7	3.4	4.9	3.7	< 1.0 U	1.9	0.23 J	0.26 J	0.29 J	0.33 J	0.40 J	0.38 J
Ethylbenzene	ug/L	700	<1.0 U	<10 U	<1.0 U	<2.0 U	<2.0 U	0.22 J	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Tetrachloroethene	ug/L	5	**94.0**	**81.4**	**51.5**	**14**	**14**	**11**	2.6	0.34 J	<1.0 U	<1.0 U	<1.0 U	<1.0 U	0.38 J	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Toluene	ug/L	1000	<1.0 U	<1.0 U	<1.0 U	<2.0 U	<2.0 U	0.83 J	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
trans-1,2-Dichloroethene	ug/L	100	2.4	2.0	2.2	1.8	8.6	2.5	1.9	2.1	1.6	2.6	1.3	0.68 J	0.89 J	0.84 J	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Trichloroethene	ug/L	5	**119**	**78.2**	**56.6**	**48**	**33**	**23**	**5.7**	1.4	0.35 J	0.34 J	<1.0 U	3.8	**6.6**	<1.0 U	<1.0 U	0.26 J	<1.0 U	<1.0 U	<1.0 U	<1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Vinyl chloride	ug/L	2	**2.3**	1.6	**3.7**	1.9 J	**12**	**3.3**	**3**	**11**	**7.3**	**6.7**	**2.1**	1.2	1.6	1.5	<1.0 U	0.79 J	<1.0 U	<1.0 U	<1.0 U	< 1.0 U	0.65 J	0.25 J	< 1.0 U
Xylenes	ug/L	10,000	<1.0 U	<10 U	<1.0 U	<2.0 U	<2.0 U	1.0	<1.0 U	<2.0 U	<2.0 U	<2.0 U	<2.0 U	<2.0 U	<2.0 U	<2.0 U	<2.0 U	<2.0 U	<2.0 U	<2.0 U	<2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U
Total VOCs	**ug/L**		**372**	**275**	**180**	**91.8**	**174**	**76.0**	**42.9**	**56.3**	**43.3**	**52.1**	**11.3**	**17.3**	**21.7**	**11.5**	**2.50**	**3.61**	**0.59**	**0.26**	**0.29**	**0.33**	**1.31**	**0.86**

NOTES:
< - Constituent not detected above laboratory reporting limit shown.
(1) MCL not listed for 1,1-dichloroethene.
Bold - Result above MCL.
Carbon source introductions began in December 1999.
J - Value is estimated.
MCL - Maximum Contaminant Level.
ug/L - Micrograms per Liter.
Samples collected in September and October 1999 represent baseline conditions.
UJ - Constituent not detected above laboratory reporting limit; reporting limit estimated.
U - Constituent not detected above laboratory reporting limit shown.

Table A-5
Summary of Annual Groundwater Analytical Results from Reactive Zone 3 East Wells
RACER Trust
Moraine, Ohio

RZ-3 East			GM-21																											
Constituents	**Units**	**MCL[1]**	**9/22/99**	**2/23/00**	**5/26/00**	**9/22/00**	**3/19/01**	**6/25/01**	**11/13/01**	**12/11/01**	**6/12/02**	**9/25/02**	**5/22/03**	**9/24/03**	**9/14/04**	**10/17/05**	**9/20/06**	**12/1/06**	**9/26/07**	**10/3/08**	**11/16/09**	**9/28/10**	**9/29/11**	**9/7/12**	**9/26/13**	**10/9/14**	**12/11/15**	**8/22/16**	**8/17/17**	**7/25/18**	**7/12/19**
Volatile Organic Compounds																														
1,1,1-Trichloroethane	ug/L	200	53.1	15.4	27.9	15.7	7.0	7.7	6.9	1.2	23	31	18	31	26	4.3	12	4.7	8.5	8.7	2.4	0.75 J	1.0	<2.0 U	<1.0 U	<1.0 U	<2.0 U	<1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
1,1-Dichloroethane	ug/L	--	9.0	5.8	6.8	5.6	5.1	4.1	3.8J	0.71 J	5.4	5.0 J	4.1 J	6.9 J	4.2 J	3.4	8.6	6.4	18	15	22	20	16	18	9.5	16	12	<1.0 U	11	9.3	6.3
1,1-Dichloroethene	ug/L	7	3.9	1.6	2.4	1.6	1.2	<1.0 U	<5.0 U	<1.0 U	3.6	2.6 J	<6.7 U	2.0 J	3.1 J	<1.0 U	0.19 J	0.2 J	< 1.4 U	0.33 J	<1.0 U	<1.0 U	<1.0 U	<2.0 U	<1.0 U	<1.0 U	<2.0 U	<1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Benzene	ug/L	5	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<5.0 U	<1.0 U	<6.0 U	<6.7 U	<6.7 U	<8.0 U	<9.1 U	<1.0 U	<1.0 U	<1.0 U	< 1.4 U	< 1.4 U	<1.0 U	<1.0 U	<1.0 U	<2.0 U	<1.0 U	<1.0 U	<2.0 U	<1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
cis-1,2-Dichloroethene	ug/L	70	66.4	35.9	47.8	38.7	39.5	37.8	39	6.5	48	43	**130**	**100**	56	20	14	8.2	26	38	7.8	3.9	9.9	8.5	5.1	12	22	<1.0 U	19	23	10
Ethylbenzene	ug/L	700	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<5.0 U	<1.0 U	<6.0 U	<6.7 U	<6.7 U	<8.0 U	<9.1 U	<1.0 U	<1.0 U	<1.0 U	< 1.4 U	< 1.4 U	<1.0 U	<1.0 U	<1.0 U	<2.0 U	<1.0 U	<1.0 U	<2.0 U	<1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Tetrachloroethene	ug/L	5	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<5.0 U	<1.0 U	<6.0 U	<6.7 U	<6.7 U	<8.0 U	<9.1 U	<1.0 U	<1.0 U	<1.0 U	< 1.4 U	0.56 J	<1.0 U	<1.0 U	<1.0 U	<2.0 U	<1.0 U	<1.0 U	<2.0 U	<1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Toluene	ug/L	1000	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<5.0 U	<1.0 U	<6.0 U	<6.7 U	<6.7 U	<8.0 U	<9.1 U	<1.0 U	<1.0 U	<1.0 U	< 1.4 U	< 1.4 U	<1.0 U	<1.0 U	<1.0 U	<2.0 U	<1.0 U	<1.0 U	<2.0 U	<1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
trans-1,2-Dichloroethene	ug/L	100	7.8	9.3	7.4	12.9	16.4	15.7	15	2.8	8.3	5.1	2.2J	2.9J	7.9	22	4.3	4.8	2.5	4.7	4.4	3	1.9	1.7 J	1.1	1.6	1.6 J	<1.0 U	1.5	1.6	1.0
Trichloroethene	ug/L	5	**28.7**	**283**	**311**	**189**	**169**	**158**	**160**	**28**	**210**	**230**	**79**	**200**	**180**	1.8	**5.9**	0.8 J	2.8	**18**	2.4	3.2	**19**	**14**	**12**	**18**	**16**	<1.0 U	2.4	3.9	2.1
Vinyl chloride	ug/L	2	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<5.0 U	<1.0 U	<6.0 U	<6.7 U	<6.7 U	<8.0 U	<9.1 U	**13**	**9.3**	**4.7**	**12**	**19**	**6.6**	**3.6**	**6.2**	**5.1**	**3.8**	**5.8**	**8.9**	<1.0 U	**9.7**	**15**	**6.6**
Xylenes	ug/L	10000	<1.0 U	2.3	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<5.0 U	<1.0 U	<6.0 U	<6.7 U	<6.7 U	<8.0 U	<9.1 U	<2.0 U	<2.0 U	<2.0 U	<'2.9 U	< 2.9 U	<2.0 U	<2.0 U	<2.0 U	<4.0 U	<2.0 U	<2.0 U	<4.0 U	<2.0 U	< 2.0 U	< 2.0 U	< 2.0 U
Total VOCs	**ug/L**		**169**	**353**	**403**	**264**	**238**	**223**	**225**	**39.2**	**298**	**317**	**233**	**343**	**277**	**64.5**	**54.3**	**29.8**	**69.8**	**104**	**45.6**	**34.5**	**54.0**	**47.3**	**31.5**	**53.4**	**60.5**	**0.0**	**43.6**	**52.8**	**26.0**

NOTES:
< - Constituent not detected above laboratory reporting limit shown.
(1) MCL not listed for 1,1-dichloroethene.
Bold - Result above MCL.
Carbon source introductions began in December 1999.
MCL - Maximum Contaminant Level.
ug/L - Micrograms per Liter.
J - Value is estimated.
Samples collected in September and October 1999 represent baseline conditions.
UJ - Constituent not detected above laboratory reporting limit; reporting limit estimated.
U - Constituent not detected above laboratory reporting limit shown.

Table A-6
Summary of Annual Groundwater Analytical Results from Reactive Zone 4 East Wells
RACER Trust
Moraine, Ohio

RZ-4 East			GM-19S																									
Constituents	**Units**	**MCL[1]**	**9/20/99**	**5/24/00**	**9/22/00**	**3/19/01**	**6/25/01**	**11/12/01**	**6/12/02**	**9/26/02**	**5/21/03**	**09/25/03**	**09/13/04**	**10/18/05**	**09/21/06**	**09/17/07**	**09/23/08**	**11/17/09**	**4/7/10**	**9/27/10**	**9/29/11**	**41158**	**9/26/13**	**10/7/14**	**12/8/15**	**8/22/16**	**8/16/17**	**7/24/18**	**7/12/19**
Volatile Organic Compounds																												
1,1,1-Trichloroethane	ug/L	200	16	17.9	14.5	11.9	9.6	7.6	7.2	6.3	12	13	14	13	9.7 J	0.59 J	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	< 1.4 U	<1.0 U	<1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
1,1-Dichloroethane	ug/L	--	7.7	7.0	4.4	4.1	2.9	2.9 J	3.7	6.3	8.4	8.3	8.1	9.0	7 J	10	13	12	9.6	9.5	10.0	8.4	8.3	7.6	3.1	3.4	2.3	2.3	1.9
1,1-Dichloroethene	ug/L	7	1.0	1.1	<1.0 U	<1.0 U	<1.0 U	<3.3 U	0.98	<4.0 U	<4.0 U	1.6 J	1.9 J	1.2 J	<22 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	< 1.4 U	<1.0 U	<1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Benzene	ug/L	5	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<3.3 U	0.62	<4.0 U	<4.0 U	<5.0 U	<4.0 U	<1.7 U	<22 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	< 1.4 U	<1.0 U	<1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
cis-1,2-Dichloroethene	ug/L	70	34.6	42.9	37.6	38.2	31.5	26	28	39	**81**	**89**	61	29	**660**	0.3 J	0.68 J	0.27 J	0.27 J	< 1.0 U	5.3	7.3	26	37	37	44	39	31	32
Ethylbenzene	ug/L	700	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<3.3 U	<3.3 U	<4.0 U	<4.0 U	<5.0 U	<4.0 U	<1.7 U	<22 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	< 1.4 U	<1.0 U	<1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Tetrachloroethene	ug/L	5	**46**	**57.1**	**68**	**67.6**	**71.7**	**64**	**60**	**52**	**62**	**62**	**71**	**95**	**9.1 J**	1.5	0.94 J	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	< 1.4 U	<1.0 U	<1.0 U	< 1.0 U	0.37 J	1.0
Toluene	ug/L	1000	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<3.3 U	<3.3 U	<4.0 U	<4.0 U	<5.0 U	<4.0 U	<1.7 U	<22 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	< 1.4 U	<1.0 U	<1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
trans-1,2-Dichloroethene	ug/L	100	2.3	2.7	2.6	3.0	2.4	2.0	2.3	2.7	2.5	2.9	2.4	1.0 J	10 J	0.29 J	0.52 J	0.37 J	0.45 J	0.46 J	1.1	0.84 J	1.1	0.91 J	0.66 J	0.64 J	0.52 J	0.66 J	0.52 J
Trichloroethene	ug/L	5	**71.1**	**104**	**104**	**107**	**121**	**97**	**110**	**110**	**120**	**140**	**120**	**140**	**11 J**	0.46 J	3	0.22 J	<1.0 U	<1.0 U	<1.0 U	0.30 J	0.46 J	0.81 J	1.3	1.8	1.9	2.4	2.3
Vinyl chloride	ug/L	2	<1.0 U	1.4	<1.0 U	<1.0 U	<1.0 U	<3.3 U	0.70	**5.2**	<4.0 U	<5.0 U	<4.0 U	1.8	<22 U	<1.0 U	**9.3**	<1.0 U	<1.0 U	<1.0 U	**12**	**10**	**17**	**15**	**6.4**	**4.6**	**4**	**8.8**	**3.6**
Xylenes	ug/L	10000	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<3.3 U	<3.3 U	<4.0 U	<4.0 U	<5.0 U	<4.0 U	<3.3 U	<44 U	<2.0 U	<2.0 U	<2.0 U	<2.0 U	<2.0 U	<2.0 U	<2.0 U	<2.0 U	<2.0 U	< 2.9 U	<2.0 U	<2.0 U	< 2.0 U	< 2.0 U	< 2.0 U
Total VOCs	**ug/L**		**179**	**234**	**231**	**232**	**239**	**200**	**214**	**222**	**286**	**317**	**278**	**290**	**707**	**13.1**	**27.4**	**12.9**	**10.3**	**10.0**	**28.4**	**26.8**	**52.9**	**61.3**	**48.5**	**54.4**	**47.7**	**45.5**	**41.3**

NOTES:
< - Constituent not detected above laboratory reporting limit shown.
(1) MCL not listed for 1,1-dichloroethene.
Bold - Result above MCL.
Carbon source introductions began in December 1999.
J - Value is estimated.
MCL - Maximum Contaminant Level.
ug/L - Micrograms per Liter.
Samples collected in September and October 1999 represent baseline conditions.
UJ - Constituent not detected above laboratory reporting limit; reporting limit estimated.
U - Constituent not detected above laboratory reporting limit shown.

Table A-7
Bioattenuation Parameter Results for Groundwater Samples Collected in Reactive Zone 1
RACER Trust
Moraine, Ohio

RZ-1		GM-29																														
Constituents	**Units**	**9/1/99**	**2/22/00**	**5/26/00**	**9/21/00**	**3/20/01**	**6/26/01**	**11/13/01**	**12/12/01**	**6/13/02**	**9/25/02**	**5/22/03**	**9/24/03**	**9/15/04**	**9/29/99**	**2/22/00**	**5/26/00**	**10/17/05**	**9/28/06**	**9/26/07**	**10/6/08**	**11/17/09**	**9/29/10**	**9/30/11**	**9/26/12**	**9/27/13**	**10/9/14**	**12/8/15**	**8/22/16**	**8/17/17**	**7/25/18**	**7/12/19**
Inorganics & TOC																																
Nitrate	mg/L	0.0	0.0	0.0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.1 U	NA	NA	NA
Nitrite	mg/L	0.0	0.0	0.0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nitrogen, Ammonia	mg/L	<0.30 U	<0.30 U	<0.30 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.30 U	39.0	37.9	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	< 0.100 UH	NA	NA	NA	NA
Manganese (Total)	mg/L	0.552	0.136	0.35	0.248	0.203	0.136	0.17 B	0.17	1.5 B	0.18 B	0.67 J	0.20 J	0.17	0.422	18.7	9.78	0.18	1.3	0.3 J	< 0.19 U	0.296	0.451	0.18	0.170	0.190	0.190	0.22	0.14	180	0.15	0.12
Manganese (Dissolved)	mg/L	0.13	0.101	0.177	0.125	0.116	0.128	0.17 B	0.15	0.13 B	0.16 B	0.15 J	0.21 J	0.15	0.203	13.2	10.7	0.14	0.12	0.16 J	< 0.16 U	0.118	0.113	0.11	0.110	0.110	0.130	0.12	0.13	140	0.12	0.17
Iron (Total)	mg/L	18	1.43	10.1	8.48	5.84	2.52	3.4	3.8	47.8 B	3.8	28.6	4.9	3.2	6.78	566	374	4.6	<1.0 U	8.9	< 5.4 U	13.8	19.6	6.3	5.0	6.5	6.4	7.3	4.4	5.8	4.6	3.3
Iron (Dissolved)	mg/L	0.24	0.13	2.78	3.09	<0.10 U	2.03	3.3	2.9	2.2 B	2.8	2.4	3.6	2.7	<0.10 U	366	417	3.7	2.9	3.4	< 3.9 U	3.3	2.97	2.4	2.3	2.4	3.6	4.0	4.1	4.1	3.6	4.5
Iron (Ferrous)	mg/L	0.02	0.0	2.2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Sulfate	mg/L	90	126	31	29	31	37	65	48	63	76	91 J	52	14 J	61	508	140	51	70	65	< 5 UJ	68	72	64	58	55	41	49	42	43	49	51
Sulfide	mg/L	<4.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	1.3	<1.0 U	<1.0 U	<1.0 U	0.54 B	1.6	<1.0 U	<1.0 U	<1.0 U	5.18	<1.0 U	<1.0 U	<1.0 U	<1.0 U	0.56 J	<1.0 U	<1.0 U	0.80 J	<1.0 U	<1.0 U	<1.0 U	<1.0 U	< 1.0 U	<1.0 U	< 1.0 U
Total Organic Carbon	mg/L	18	11	22	<1.0 U	7.57	7.3	10	10	8.0	8.0	7.0	9.0	9.0	6.0	14,100	5550	11	13	15 J	16	9.0	8.0	8.5	9.4	12	16	12	14	5.9	8.8	NA
Chloride	mg/L	254	426	508	373	337	262	600 B	460	490	490	490	560 J	540	397	1,560	1080	370	380	360 J	<1.0 U	210	160	130	130 B	140	150	150 B	140	140	120	84
Permanent Gases																																
Carbon Dioxide	mg/L	46.52	49.87	44.05	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	16.96	999.4	918.87	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Oxygen	mg/L	1.02	0.66	1.41	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	8.23	0.20	0.17	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nitrogen	mg/L	20.29	18.7	15.61	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	14.51	7.13	6.19	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methane	mg/L	0.012	0.0077	0.00017	1.62	1.30	1.5	0.610	1.2	0.56	1.1	0.6	1.5	3.8	0.0043	0.026	0.88	13	10	NA	16	8.1	5.7	3.1	3.7	4.5	6.0	5.9	6.7	6.2	4	3.3
Carbon Monoxide	mg/L	<0.40 U	<0.40 U	<0.40 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.40 U	<0.40 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Light Hydrocarbon Scan																																
Ethane	ng/L	5,641	1,861	751	639	460	17,000	20,000	28,000	14,000	16,000	7,400	9,900	13,000	1218	1495	770	170,000	350,000	NA	370,000	360,000	340,000	180,000	160,000	150,000	180,000	170,000	160,000	140,000	110,000	100,000
Ethene	ng/L	9,769	1,275	12,098	441,796	160,000	130,000	230,000	180,000	48,000	140,000	150,000	200,000	1,700,000	2458	1980	11737	1,600,000 J	750,000	NA	420,000	140,000	59,000	20,000	18,000	17,000	16,000	16,000	17,000	12,000	7,400	6,200
Field Parameters																																
pH	S.U.	6.99	7.02	6.86	7.24	7.31	7.20	7.47	7.57	7.14	7.22	6.32	6.88	6.85	7.24	5.76	5.48	6.80	6.94	6.63	7.1	6.91	7.09	6.59	6.69	6.87	6.94	7.19	6.93	6.75	6.90	6.71
Specific Conductivity	umhos/cm	1,502	3,044	2,388	1,942	1,733	1,291	2,703	2,860	1,977	2,354	2,303	2,278	2,580	2,033	28,360	11,895	2,200	2,170	2,350	1,870	1,264	1,427	1,651	960	1,302	1,341	1,460	1,340	1,300	1,090	1,091
Dissolved Oxygen	mg/L	0.35	0.51	0.45	3.44	8.20	0.40	0.22	0.01	3.57	1.40	1.38	0.13	0.04	0.82	2.84	4.32	0.00	0.29	0.4	0.11	0.16	2.00	0.15	0.70	0.21	0.11	0.00	0.26	3.35	NA	0.29
Redox Potential	mV	-526.6	19.6	-105.4	-35.0	-158.2	-166.4	-129.7	-168	-122.9	-91.3	-157.8	-118.6	-134	175	-118.4	-65.4	-153	-168	-139	-54	-140.1	-163	-14.2	-60	-108	-102.1	-124.0	-155.0	-125.0	-183.0	-96.0
Temperature	^{o}C	17.8	16.9	17.97	17.64	20.04	20.47	16.42	17.13	19.33	17.63	18.23	16.81	16.4	18.33	20.24	21.74	16.8	16.69	18	16.78	16.50	18.00	21.1	21.0	24.0	17.2	16.7	10.9	19.5	16.7	17.8

NOTES:
< - Constituent not detected above laboratory reporting limit.
(1) Monitoring Well GM-28R was installed on December 21, 2015 as a replacement for well GM-28.
B - Blank Contamination.
^{o}C - Degrees Celsius.
Carbon source introductions began in December 1999.
F2 - MS/MSD RPD (relative perect difference) exceeds control limits.
J - Value is estimated.
mg/L - Milligrams per Liter.
ng/L - Nanograms per Liter.
umhos/cm - Micromohs per Centimeter.
mV - Millivolts.
NA - Not Analyzed.
Samples collected in September 1999 represent baseline conditions.
S.U. - Standard Units.
U - Constituent not detected above laboratory reporting limit shown.

Table A-7
Bioattenuation Parameter Results for Groundwater Samples Collected in Reactive Zone 1
RACER Trust
Moraine, Ohio

RZ-1		GM-23																							
Constituents	**Units**	**9/2/99**	**2/21/00**	**5/31/00**	**3/20/01**	**6/13/02**	**9/26/02**	**5/22/03**	**9/23/03**	**9/14/04**	**10/17/05**	**9/28/06**	**9/27/07**	**10/23/08**	**11/17/09**	**9/29/10**	**9/30/11**	**9/7/12**	**9/27/13**	**10/10/14**	**12/5/15**	**8/22/16**	**8/17/17**	**7/26/18**	**7/12/19**
Inorganics & TOC																									
Nitrate	mg/L	0.08	0.0	0.0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1.0 U	NA	NA	NA
Nitrite	mg/L	3.83	0.0	0.0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nitrogen, Ammonia	mg/L	<0.30 U	0.94	2.84	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.550 H	NA	NA	NA	NA
Manganese (Total)	mg/L	4.71	0.887	0.121	0.469	1.5 J	1.0 J	1.5 J	1.6 J	1.3 J	0.79	1.5	1.4 J	0.89	0.539	0.508	0.57	0.410 B	0.450	0.250 B	0.14	0.18	0.31	0.24	0.33
Manganese (Dissolved)	mg/L	0.346	0.841	0.101	0.311	1.3 J	0.68 J	1.5 J	1.7 J	1.2 J	0.81	1.5	1.3 J	0.90	0.516	0.492	0.5	0.380 B	0.440	0.240 B	0.22	0.17	300	0.22	0.38
Iron (Total)	mg/L	13.6	0.53	0.18	0.48	0.16 J	0.63	0.50	0.14	0.11	30.7	13.6	10.8	10.1	5.51	5.72	7.5	4.8	3.6	4.0 B	4.2	4.5	3.6	3.2	2.8
Iron (Dissolved)	mg/L	<0.10 U	<0.10 U	<0.10 U	<0.10 U	<0.10 U	<0.10 U	<0.10 U	<0.10 U	<0.10 U	34.2	13.2	10	10	5.21	5.33	6	4.7	3.7	4.1 B	5.8	4.6	3.2	2.8	2.7
Iron (Ferrous)	mg/L	4.0	0.0	0.0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Sulfate	mg/L	72	650	8040	1440	920	810	310 J	650	430 J	120	850	590	490	130	160	200	74	120	34	15	34	61	38	60
Sulfide	mg/L	<4.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	0.67 B	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	0.73 J	<1.0 U	<1.0 U	<1.0 U	<1.0 U	0.59 J	<1.0 U	<1.0 U	<1.0 U	<1.0 U	< 1.0 U
Total Organic Carbon	mg/L	19	25	19	10.8	15 J	15	15	13	10 J	360	11	9.0	9.0	7.0	9.0	6.6	7.2	6.4	7.7	6.9 B	6.2	5.9	6.6	NA
Chloride	mg/L	118	143	85	232	180	190	220	140 J	220	260	220	210	220	100	43	65	97 B	39	150 B	180 B	120	71	130	81
Permanent Gases																									
Carbon Dioxide	mg/L	88.47	264.8	323.79	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Oxygen	mg/L	0.96	1.56	17.78	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nitrogen	mg/L	20.22	13.75	3.13	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methane	mg/L	0.12	0.72	0.021	0.78	1.6	2.1	2.7	1.8	1.5	1.3	0.91	0.64	1.9	1.7	2.5	2.0	2.6	0.84	5.5	5.4	4.5	2.6	3.7	2.8
Carbon Monoxide	mg/L	<0.40 U	<0.40 U	<0.40 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Light Hydrocarbon Scan																									
Ethane	ng/L	6,878	14,644	1,037	11,000	25,000	32,000	44,000	23,000	17,000	16,000	12,000	7,100	21,000	31,000	36,000	25,000	71,000	16,000	100,000	88,000	84,000	71,000	95,000	57,000
Ethene	ng/L	580,916	439,458	569	260,000	230,000	230,000	1,200,000	270,000	260,000	500,000	900,000	370,000 J	960,000	2,100,000	1,700,000	230,000	74,000	16,000	74,000	140,000	76,000	28,000	26,000	24,000
Field Parameters																									
pH	S.U.	6.80	6.62	6.31	6.64	6.81	6.76	5.59	6.73	7.04	5.66	6.69	6.34	7.74	6.80	6.89	6.52	9.13	6.76	6.98	7.43	6.89	6.37	6.9	6.94
Specific Conductivity	umhos/cm	1,160	2,856	6,720	3,448	2,290	2,390	1,683	2,258	2,130	2,570	2,740	2,470	1,465	1,184	1,395	1,812	1,310	1,228	1,321	1,530	1,330	1,110	1,180	890.000
Dissolved Oxygen	mg/L	0.65	0.78	10.48	8.38	4.23	0.42	1.76	0.85	0.00	0.00	0.40	0.44	0.11	0.16	0.23	0.54	2.83	0.40	0.23	0.00	0.40	5.20	NA	0.43
Redox Potential	mV	122.2	158.7	194.2	160.4	346.5	215.6	247.9	198.8	57	-108	-108	-91	189	-90.1	-104.2	-52	-161	-49	-63.8	-79	-114	-164	NA	-61
Temperature	^{o}C	17.89	17.6	26.45	19.08	16.40	19.06	17.91	17.38	16.30	16.50	16.78	17.50	17.12	17.15	18.89	17.40	22.5	24.7	16.7	16.7	18.5	18.9	16.7	17.3

NOTES:
< - Constituent not detected above laboratory reporting limit.
(1) Monitoring Well GM-28R was installed on December 21, 2015 as a replacement for well GM-28.
B - Blank Contamination.
^{o}C - Degrees Celsius.
Carbon source introductions began in December 1999.

J - Value is estimated.
mg/L - Milligrams per Liter.
ng/L - Nanograms per Liter.
umhos/cm - Micromohs per Centimeter.
mV - Millivolts.
NA - Not Analyzed.
Samples collected in September 1999 represent baseline conditions.
S.U. - Standard Units.
U - Constituent not detected above laboratory reporting limit shown.

Table A-7
Bioattenuation Parameter Results for Groundwater Samples Collected in Reactive Zone 1
RACER Trust
Moraine, Ohio

RZ-1		GM-28																						GM-28R[1]				
Constituents	**Units**	**9/1/99**	**2/23/00**	**5/26/00**	**9/21/00**	**3/20/01**	**6/26/01**	**11/15/01**	**12/12/01**	**7/21/02**	**9/24/02**	**5/23/03**	**10/1/03**	**4/30/04**	**9/15/04**	**10/18/05**	**9/27/06**	**9/20/07**	**10/22/08**	**11/16/09**	**9/28/10**	**10/5/11**	**12/28/15**	**8/22/16**	**8/17/17**	**7/25/18**	**7/12/2019**
Inorganics & TOC																												
Nitrate	mg/L	0.08	0.0	0.0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.1 U	NA	NA	NA	NA
Nitrite	mg/L	0.06	0.0	0.0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nitrogen, Ammonia	mg/L	<0.30 U	<0.30 U	0.68	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Manganese (Total)	mg/L	3.2	1.15	6.26	4.1	0.594	2.24	0.58	0.47	1.1	0.48 B	0.69 J	0.42 J	0.34	0.37	0.45	0.46	0.44 J	1.4	0.468	0.468	0.72	0.63	0.40	0.32	0.29	0.22
Manganese (Dissolved)	mg/L	0.068	0.449	6.71	3.94	0.477	1.76	0.61	0.49	1.1	0.41 B	0.29 J	0.40 J	0.32	0.36	0.45	0.43	0.43 J	1.5	0.444	0.466	0.49	0.67	0.38	0.30	0.25	0.22
Iron (Total)	mg/L	106	25.3	22.7	58.9	29.6	59	23.6	23.5	36.2	28.7	47.9	23.4 J	17.6	15.7	16.1	14.5	11.7	23.4	11.3	11.6	22	4.6	5.6	5.7	5.9	2.9
Iron (Dissolved)	mg/L	<0.10	0.59	23.3	48.3	2.65	49.8	23.3	23.7	34.7	23.4	16.7	22.4 J	16.4	15.1	15.2	13.1	10.7	23.7	10.2	10.6	5.5	3.5	4.6	3.7	4.5	2.6
Iron (Ferrous)	mg/L	0.0	0.03	2.6	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Sulfate	mg/L	89	43	<5.0 U	<5.0 U	9.0	106	<5.0 U	<5.0 U	<5.0 U	18	65J	31J	89	93 J	91	75	77	33	55	45	41	33	42	29	24	29
Sulfide	mg/L	<4.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	1.5	<1.0 U	2.0	4.3	2.5	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	NA	<1.0 U	<1.0 U	<1.0 U F2	< 1.0 U
Total Organic Carbon	mg/L	15	24	742	571	90.0	360	74	68B	140	23	15	17	15 J	8.0	10	7.0	8.0 J	310	6.0	7.0	9.1	3.9	4.2	4.8	6.7	NA
Chloride	mg/L	208	664	805	782	1030	508	730B	560	370	450	350	270 J	320	340	320	320	300 J	260	220	170	130	70	61	12	18	NA
Permanent Gases																												
Carbon Dioxide	mg/L	41.52	63.57	16.51	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Oxygen	mg/L	2.32	0.59	0.64	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nitrogen	mg/L	19.42	16.39	19.82	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methane	mg/L	0.002487	0.001832	0.21	1.70	13.0	13.0	13	20	19	14	8.9	11	7.9	6.6	2.8	2.5	2.3	2.9	4.2	2.3	0.76	0.69	0.36	0.86	1.8	0.74
Carbon Monoxide	mg/L	<0.40 U	<0.40 U	<0.40 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Light Hydrocarbon Scan																												
Ethane	ng/L	750	493	865	1,198	42,000	39,000	91,000	98,000	420,000	300,000	310,000	230,000	160,000	150,000	81,000	73,000	72,000	52,000	73,000	53,000	14,000	1,200	290	580	1200	380
Ethene	ng/L	48	98	646	1,794,606	57,000	5,000	1,100	1,400	8,800	12,000	74,000	430	160	54	<210 U	<25 U	62	9,300	<200 U	150	86	240	27 J	52 J	2200	82 J
Field Parameters																												
pH	S.U.	7.02	6.92	7.01	7.18	7.1	6.64	6.50	7.45	6.84	7.24	6.86	6.80	NA	6.85	5.47	7.08	6.72	6.49	7.04	7.16	NA	6.79	6.95	6.23	7.00	6.85
Specific Conductivity	umhos/cm	1,359	3,124	4,402	4,538	3,724	3,216	3,136	3,700	2,187	2,195	2,132	1,501	NA	2,030	2,230	1,880	2	1,428	1,821	1,615	NA	1080	911	681	593	574
Dissolved Oxygen	mg/L	0.95	1.45	2.52	6.78	4.36	0.41	0.83	0.20	0.68	0.35	1.41	0.34	NA	0	0	0.29	0.64	0.13	0.20	2.70	NA	0.22	0.29	2.97	NA	0.12
Redox Potential	mV	90.5	56.0	-93.7	-200.1	-70.6	-177.8	-148.2	-203	-153.3	-135.3	-93.1	-146.9	NA	-165	-166	-183	-152	27	-166.2	-153.5	NA	-78	-126	-111	-177	-86.8
Temperature	^{o}C	16.4	18.48	19.24	20.21	18.93	19.04	19.24	18.92	20.44	18.68	16.88	17.97	NA	16.2	15.9	16.33	17.1	16.38	16.65	16.56	NA	16.79	18.1	17.48	19.1	17.5

NOTES:
< - Constituent not detected above laboratory reporting limit.
(1) Monitoring Well GM-28R was installed on December 21, 2015 as a replacement for well GM-28.
B - Blank Contamination.
^{o}C - Degrees Celsius.
Carbon source introductions began in December 1999.

J - Value is estimated.
mg/L - Milligrams per Liter.
ng/L - Nanograms per Liter.
umhos/cm - Micromohs per Centimeter.
mV - Millivolts.
NA - Not Analyzed.
Samples collected in September 1999 represent baseline conditions.
S.U. - Standard Units.
U - Constituent not detected above laboratory reporting limit shown.

Table A-8
Bioattenuation Parameter Results for Groundwater Samples Collected in Reactive Zone 3 West
RACER Trust
Moraine, Ohio

RZ-3 West		GM-32																									
Constituents	**Units**	**9/22/99**	**2/28/00**	**5/30/00**	**9/25/00**	**3/19/01**	**11/12/01**	**12/11/01**	**6/12/02**	**9/20/02**	**5/23/03**	**10/1/03**	**9/14/04**	**10/19/05**	**9/19/06**	**9/18/07**	**9/23/08**	**11/16/09**	**9/27/10**	**9/29/11**	**9/6/12**	**9/26/13**	**10/8/14**	**12/8/15**	**8/17/16**	**8/16/17**	**7/24/18**	**7/11/19**
Inorganics & TOC																											
Nitrate	mg/L	0	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nitrite	mg/L	0	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nitrogen, Ammonia	mg/L	2.3	2.0	19	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Manganese (Total)	mg/L	0.15	0.52	0.051	0.30	0.17	0.16 B	0.087 B	0.043 B	0.053 B	0.10 J	0.13 J	0.13 J	0.076	0.088	0.077 J	0.051	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Manganese (Dissolved)	mg/L	0.05	0.06	0.048	0.31	<0.050 U	0.020 B	0.024 B	0.042 B	0.028 B	0.077 J	0.11 J	0.13 J	0.067	0.078	0.072 J	0.056	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Iron (Total)	mg/L	8.14	42.4	18.4	81.0	13	16.5	10.5	7.5	8.4 B	21.3	31.4 J	33.9	22.0	24.7	20	14	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Iron (Dissolved)	mg/L	3.53	0.59	17.1	81.6	3.17	5.2	6.5	8.1	6.8 B	18.7	30.5 J	34.5	19.8	24.5	19.5	13.6	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Iron (Ferrous)	mg/L	1.8	2.2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	24	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Sulfate	mg/L	30	<5.0 U	<10 U	<10 U	<20 U	5.0	4.0 J	1.0 J	<5.0 U	<5.0 U	<5.0 U	<5.0 U	<5.0 U	<5.0 U	<5.0 U	24	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Sulfide	mg/L	<1.0 U	<10 U	<1.0 U	<1.0 U	1.6	<1.0 U	<1.0	0.50 J	1.3	0.86 B	7.3	16	4.1	1.0	14	7.7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Organic Carbon	mg/L	68	1200	2020	2720	1120	320 B	250	240	160	150	170	240 J	300	260	290 J	95	170	260	71	62	40	22	6.0	4.2	9.2	3.8	3.8
Chloride	mg/L	317	638	740	740	798	700 B	630	470	510	390	510 J	530	550	560	560 J	400	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Permanent Gases																											
Carbon Dioxide	mg/L	39.79	8.94	24.32	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Oxygen	mg/L	1.67	0.85	<0.15	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nitrogen	mg/L	14.93	15.23	2.40	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methane	mg/L	2.7	7.1	15	17	29	29	38	24	32	24	19	25	30 J	26	26	25	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbon Monoxide	mg/L	<0.40 U	<0.40 U	<0.40 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Light Hydrocarbon Scan																											
Ethane	ng/L	1,649	9,965	1,029	189	7,900	42,000	72,000	84,000	94,000	74,000	46,000	57,000	85,000 J	76,000	73,000	58,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Ethene	ng/L	86,509	163,855	472,312	510,593	150,000	130,000	90,000	93,000	49,000	9,900	3,400	2,000	1,900 J	2,400	1,200	940	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Field Parameters																											
pH	S.U.	7.54	8.59	7.64	7.73	8.36	8.42	8.13	8.55	8.13	6.41	6.81	6.86	6.30	6.84	7.00	7.13	7.02	7.68	7.20	7.15	8.05	7.26	7.04	6.81	6.68	7.15	7.07
Specific Conductivity	umhos/cm	2,750	9,030	9,195	9,225	7,483	6,874	6,200	5,432	4,289	3,908	3,192	4,210	4,810	4,510	4,240	3,220	3,540	5,328	3,280	1,998	1,388	1,520	1,380	1,200	1,320	1,140	870
Dissolved Oxygen	mg/L	0.09	0.23	10.82	2.55	0.36	0.07	0.03	1.14	0.22	1.93	0.31	0.00	0.00	0.21	0.45	1.79	0.89	2.4	1.97	0.94	0.42	0.72	0.00	7.08	6.36	0.00	0.69
Redox Potential	mV	-226.4	-279.1	-213.6	-353.8	-152.5	-222.8	-279	-220.5	-227.1	-204.6	-154.4	-160	-191	-193	-161	-200	-108	-236.9	-244	-73	-17	-99	-165.0	-148.0	-105	-167.0	-94.0
Temperature	°C	19.27	19.72	23.48	19.27	19.3	18.84	18.62	20.83	19.81	19.31	18.47	17.20	17.00	17.70	16.70	18.71	16.30	16.79	18.77	21.5	18.36	18.48	15.57	17.96	15.83	16.21	17.80

NOTES:
< - Constituent not detected above laboratory reporting limit.
B - Blank Contamination.
°C - Degrees Celsius.
Carbon source introductions began in December 1999.
J - Value is estimated.
mg/L - Milligrams per Liter.
ng/L - Nanograms per Liter.
umhos/cm - Micromohs per Centimeter.
mV - Millivolts.
NA - Not Analyzed.
Samples collected in September 1999 represent baseline conditions.
S.U. - Standard Units.
U - Constituent not detected above laboratory reporting limit shown.

Table A-8
Bioattenuation Parameter Results for Groundwater Samples Collected in Reactive Zone 3 West
RACER Trust
Moraine, Ohio

RZ-3 West		GM-8																				GM-6												
Constituents	**Units**	**3/6/98**	**9/20/99**	**9/20/02**	**12/9/03**	**9/14/04**	**10/19/05**	**9/19/06**	**9/18/07**	**9/23/08**	**11/16/09**	**9/27/10**	**9/30/11**	**9/6/12**	**9/26/13**	**10/7/14**	**12/5/15**	**8/22/16**	**8/16/17**	**7/24/18**	**7/11/19**	**3/6/98**	**9/20/99**	**9/20/02**	**12/9/03**	**9/14/04**	**10/19/05**	**9/19/06**	**9/18/07**	**9/24/08**	**9/27/10**	**10/7/14**	**12/8/15**	**7/11/2019**
Inorganics & TOC																																		
Nitrate	mg/L	<4.4 U	0.0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.1 U	NA	NA	NA	<4.4	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nitrite	mg/L	<0.033 U	0.0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.033	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nitrogen, Ammonia	mg/L	1.69	1.95	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.100 UH	NA	NA	NA	NA	<0.300	<0.30	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Manganese (Total)	mg/L	0.20	0.13	0.085 B	0.21	0.13	0.17	0.16	0.12 J	0.027	0.0617	0.14	0.035	0.025	0.037	0.061	0.086	0.091	0.082	0.068	0.048	1.07	1.11	0.27B	0.57	0.43	0.50	0.54	0.4 J	0.14	NA	NA	NA	0.18
Manganese (Dissolved)	mg/L	0.23	0.13	0.084 B	0.21	0.14	0.15	0.15	0.11 J	0.026	0.0643	0.0604	0.031	0.025	0.036	0.061	0.09	0.082	0.08	0.071	0.044	1	0.958	0.24B	0.53	0.47	0.49	0.54	0.39 J	0.13	NA	NA	NA	0.19
Iron (Total)	mg/L	1.0	0.27	0.55 B	1.9	1.8	3.2	3.4	3.3	0.69	2.2	4.27	1.2	0.830	1.700	2.700	4.1	3.8	3.4	2.9	2.1	1.32	0.27	0.40B	5.7	3.2	5.4	5.7	6.7	2.9	NA	NA	NA	5.4
Iron (Dissolved)	mg/L	1.2	0.26	0.52 B	1.9	1.8	2.8	3.1	3.0	0.64	2.13	2.05	0.98	0.780	1.200	2.500	4.2	3.2	3.3	3	1.6	<0.1	<0.10	0.30B	1.9	3.1	4.8	5.6	6.3	2.6	NA	NA	NA	5.0
Iron (Ferrous)	mg/L	<0.2 U	0.0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Sulfate	mg/L	59	54	59	<5.0 U	13 J	27	24	49	32	23	22	24	27	22	28	32	32	29	38	30	93	83	43	27	26 J	52	55	66	26	NA	NA	NA	45
Sulfide	mg/L	<1.0 U	<1.0 U	<1.0 U	<1.0 U	2	<1.0 U	1.8	0.86 J	0.54 J	1.2 J	1.4	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	< 1.0 U	<1	<1	<1.0	<1.0	3.4	< 1.0 U	< 1 U	< 1 U	6.5	NA	NA	NA	< 1.0 U
Total Organic Carbon	mg/L	7.0	8.0	16	20	19 J	19	16	16 J	12	15	19	17	8.2	9.8	5.8	4.7	5.4	7.0	6.2	NA	3	4	17	12	16 J	6	7	8 J	14 J	NA	NA	NA	NA
Chloride	mg/L	248	216	180	180 J	190	260	320	360 J	250	230	230	270	190 B	150	150	170 B	130	120	130	NA	227	247	170	190J	230	290	340	400 J	250	NA	NA	NA	NA
Permanent Gases																																		
Carbon Dioxide	mg/L	15.8	9.91	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	47.4	48.44	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Oxygen	mg/L	1.1	0.92	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.57	2.23	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nitrogen	mg/L	19.7	25.42	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	20.5	21.77	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methane	mg/L	1.5	2.5	8.5	14	9.0	8.1 J	7.2	9.1	4.4	7.8	6.7	4.7	2.5	1.8	2.3	2.1	1.9	2.4	1.6	2.7	0.008337	0.006916	7.8	7.8	7.2	4.4 J	3.5	5.3	5.2	NA	NA	NA	3.3
Carbon Monoxide	mg/L	<0.40 U	<0.40 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.4	<0.40	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Light Hydrocarbon Scan																																		
Ethane	ng/L	370	1,134	13,000	12,000	18,000	17,000 J	7,200	10,000	22,000	11,000	19,000	26,000	10,000	12,000	12,000	23,000	41,000	33,000	30,000	64,000	47	67	10,000	2,400	5,000	870 J	520	660	13,000	NA	NA	NA	8,500
Ethene	ng/L	12,233	39,617	3,700	440	56	< 76 U J	1,200	32	140	< 220 U	33	120	140	930	34	250	15 J	23 J	15 J	39 J	91	97	4,900	750	2,000	3,600 J	1,700	1,800	680	NA	NA	NA	73 J
Field Parameters																																		
pH	S.U.	7.7	7.98	8.18	7.2	7.76	6.45	7.31	7.21	8.1	7.86	7.89	7.81	10.32	7.92	7.44	7.42	7.33	6.92	7.68	7.65	7	7.05	7.46	7.76	7.16	6.06	6.8	6.84	7.17	7.27	7.36	7.08	7.00
Specific Conductivity	umhos/cm	1,539	1,584	1,734	1,870	1,900	2,080	2,120	2,300	2,060	1,920	2,083	2,560	1,690	1,488	1,419	1,420	1,330	1,420	1,340	1,030	1,422	1,493	1,658	2,080	1,830	1,880	1,920	2,130	2,160	1,900	1,318	1,410	1,250
Dissolved Oxygen	mg/L	0.16	0.28	0.37	0.04	0.00	0.00	0.53	0.70	0.00	0.00	3.00	0.60	7.38	0.63	0.55	0.00	3.97	3.61	0.21	0.28	0.88	0.48	0.34	0.03	0	0	0.24	0.51	1.43	3.30	0.19	0.00	0.19
Redox Potential	mV	-145	-49.8	-150.6	-137	-186	-162	-160	-125	-262	-24	-167.7	-115	-209	-42.8	-168.3	-200.0	-174.0	-193.0	-214.0	-156.0	57.6	26.5	-27.7	-223	-111	-107	-111	-86	-159	-136.4	-126.5	-148.0	-68.9
Temperature	°C	17.53	19.09	19.2	18.17	16.60	16.30	18.10	17.00	17.60	16.00	16.51	21.10	20.34	15.70	15.60	15.89	18.74	16.29	16.03	16.30	18.49	21.07	19.07	17.71	16.8	16.8	17.3	17.5	16.51	16.10	16.10	15.6	17.0

NOTES:
< - Constituent not detected above laboratory reporting limit.
B - Blank Contamination.
°C - Degrees Celsius.
Carbon source introductions began in December 1999.
J - Value is estimated.
mg/L - Milligrams per Liter.
ng/L - Nanograms per Liter.
umhos/cm - Micromohs per Centimeter.
mV - Millivolts.
NA - Not Analyzed.
Samples collected in September 1999 represent baseline conditions.
S.U. - Standard Units.
U - Constituent not detected above laboratory reporting limit shown.

Table A-9
Bioattenuation Parameter Results for Groundwater Samples Collected in Reactive Zone 3 East
RACER Trust
Moraine, Ohio

RZ-3 East		GM-21																		
Constituents	**Units**	**9/22/99**	**2/23/00**	**5/26/00**	**9/22/00**	**3/19/01**	**11/13/01**	**12/11/01**	**10/3/08**	**11/16/09**	**9/28/10**	**9/29/11**	**9/7/12**	**9/26/13**	**10/9/14**	**12/11/15**	**8/22/16**	**8/17/17**	**7/25/18**	**7/12/19**
Inorganics & TOC																				
Nitrate	mg/L	0.0	0.0	0.0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.1 U	NA	NA	NA
Nitrite	mg/L	0.0	0.0	0.0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nitrogen, Ammonia	mg/L	<0.30 U	<0.30 U	<0.30 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.100 UH	NA	NA	NA	NA
Manganese (Total)	mg/L	0.321	0.233	0.215	0.336	0.298	0.30 B	0.30 B	0.78	0.882	0.758	0.93	1.100 B	1.1	1.1 B	0.880 B	0.62	0.48	0.57	0.52
Manganese (Dissolved)	mg/L	0.273	0.225	0.212	0.312	0.291	0.32 B	0.29 B	0.77	0.893	0.768	0.91	1.100 B	1.0	1.1 B	0.890 B	0.61	0.51	0.54	0.55
Iron (Total)	mg/L	2.58	0.30	0.83	0.63	0.11	<0.10 U	0.16	17.9	19.6	26.1	32	31	32	34 B	29 B	29	21	27	28
Iron (Dissolved)	mg/L	<0.10 U	<0.10 U	<0.10 U	<0.10 U	<0.10 U	<0.10 U	0.11	16.7	20.2	25.6	31	33	32	34 B	29 B	28	22	27	29
Iron (Ferrous)	mg/L	0.4	0.0	0.0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Sulfate	mg/L	103	102	80	102	118	120	100	38	19	13	23	56	21	<50 U	16	41	47	32	23
Sulfide	mg/L	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	1.9	1.5	4.0 J	<1.0 U	<1.0 U	14	1.0	1.6	0.47 J	<1.0 U	<1.0 U	0.80 J	< 1.0 U
Total Organic Carbon	mg/L	1.0	3.0	2.0	<1.0 U	<1.0 U	2.0 B	1.0	18	45	91	100	86	120	120	110	94	81	95	NA
Chloride	mg/L	136	145	126	129	165	140	150	240	220	230	300	240 B	290	310 B	300 B	240	230	250	NA
Permanent Gases																				
Carbon Dioxide	mg/L	37.04	37.40	18.70	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Oxygen	mg/L	1.41	0.99	1.89	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nitrogen	mg/L	23.40	21.67	23.64	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methane	mg/L	0.037	0.018	0.014	0.042	0.048	0.049	0.035	28	28	23	15	12	NA	15	17	16	13	15	16
Carbon Monoxide	mg/L	<0.40 U	<0.40 U	<0.40 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Light Hydrocarbon Scan																				
Ethane	ng/L	72	67	84	72	82	76	120	77,000	71,000	50,000	21,000	7,500	NA	6,800	6,300	6,100	6,400	7,500	4,300
Ethene	ng/L	169	38	70	69	46	46	100	13,000	6,700	3,600	3,100	5,800	NA	5,400	8,100	7,000	4,600	5,700	4,400
Field Parameters																				
pH	S.U.	6.99	7.22	7.06	7.21	7.85	7.50	7.45	6.05	6.40	6.46	6.50	6.36	6.38	7.12	6.95	6.40	6.30	6.40	6.44
Specific Conductivity	umhos/cm	1,188	1,299	1,048	1,096	1,067	1,190	1,360	1,405	2,088	2,424	2,974	2,511	1,373	2,853	1,280	2,560	2,340	2,350	1,740
Dissolved Oxygen	mg/L	0.66	0.60	0.40	0.99	0.57	0.04	0.04	0.12	0.24	3.60	0.30	0.12	0.47	0.28	0	0.64	5.08	NA	0.81
Redox Potential	mV	-26.9	113.3	167.1	153.9	218.5	168.8	-25	68	-92.1	-95.1	-13.7	-12	22.6	-29.3	-151	-93	-76	-116	-44
Temperature	^{o}C	20.43	18.43	17.92	19.03	17.59	16.73	15.82	16.5	16.32	16.65	23.00	22.90	23.70	16.40	16.37	17.32	17.42	17.2	17.2

NOTES:
< - Constituent not detected above laboratory reporting limit.
B - Blank Contamination.
^{o}C - Degrees Celsius.
Carbon source introductions began in December 1999.
J - Value is estimated.
mg/L - Milligrams per Liter.
mV - Millivolts.
NA - Not Analyzed.
ng/L - Nanograms per Liter.
S.U. - Standard Units.
umhos/cm - Micromohs per Centimeter.
Samples collected in September 1999 represent baseline conditions.
U - Constituent not detected above laboratory reporting limit shown.

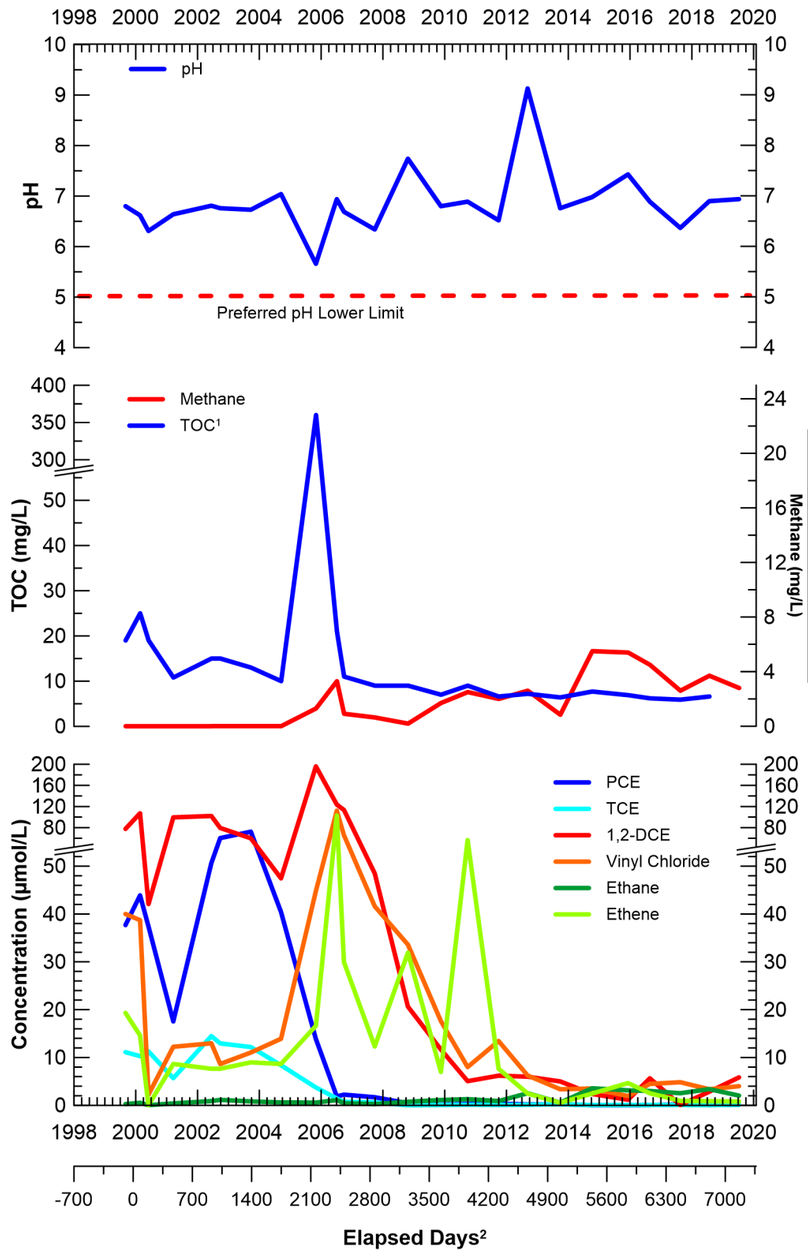
Table A-10
Bioattenuation Parameter Results for Groundwater Samples Collected in Reactive Zone 4 East
RACER Trust
Moraine, Ohio

RZ-4 East		GM-19S																										
Constituents	**Units**	**9/20/99**	**2/23/00**	**5/24/00**	**9/22/00**	**3/19/01**	**11/20/01**	**12/11/01**	**6/12/02**	**9/26/02**	**5/21/03**	**9/25/03**	**9/13/04**	**10/18/05**	**9/21/06**	**9/17/07**	**9/23/08**	**11/17/09**	**4/7/10**	**9/27/10**	**9/29/11**	**9/6/12**	**9/26/13**	**10/7/14**	**12/5/15**	**8/22/16**	**8/16/17**	**7/24/18**	**7/12/19**
Inorganics & TOC																												
Nitrate	mg/L	11	0.0	0.0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.1 U	NA	NA	NA
Nitrite	mg/L	0.0	0.0	0.0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nitrogen, Ammonia	mg/L	<0.30 U	<0.30 U	<0.30 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	< 0.100 UH	NA	NA	NA
Manganese (Total)	mg/L	0.726	1.09	0.247	0.238	0.191	0.20	0.21 B	0.25 B	0.39 B	0.30 J	0.23 J	0.25	0.24	0.99	0.28 J	0.16	0.0911	NA	0.169	0.17	0.130	0.110	0.15	0.14	0.22	0.26	0.29	0.29
Manganese (Dissolved)	mg/L	0.185	0.205	0.200	0.187	0.155	0.19	0.18 B	0.18 B	0.19 B	0.20 J	0.21 J	0.16	0.2	0.94	0.15 J	0.16	0.0900	NA	0.170	0.14	0.130	0.110	0.15	0.18	0.21	0.22	0.28	0.30
Iron (Total)	mg/L	16.9	39.4	1.19	0.40	0.9	0.091	0.18	0.26	0.44	0.17	0.96	3.0	0.38	1.6	12.7	7.4	15.2	NA	18.9	11	6.7	5.5	7.4	6.7	4.8	5.5	6.0	4.2
Iron (Dissolved)	mg/L	<0.10 U	<0.10 U	<0.10 U	<0.10 U	<0.10 U	<0.10 U	<0.10 U	<0.10 U	<0.10 U	<0.10 U	<0.10 U	<0.10 U	<0.10 U	1.4	9.4	7.3	15.1	NA	18.3	9	6.4	5.4	5.7	6.4	4.7	4.2	5.4	4.4
Iron (Ferrous)	mg/L	0.0	0.0	0.0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Sulfate	mg/L	127	131	131	118	113	100	90	110	110	150 J	150	110 J	83	95	63	68	25	NA	21	58	84	76	43	47	39	50	53	49
Sulfide	mg/L	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	0.96J	<1.0 U	<1.0 U	<1.0 U	1.3	1.6	<1.0 U	<1.0 U	<1.0 U	<1.0 U	1.0 J	NA	0.80 J	<1.0 U	0.75 J	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	< 1.0 U
Total Organic Carbon	mg/L	2.0	7.0	5.0	<1.0 U	<1.0 U	2.0 B	1.0	1.0	3.0	2.0	2.0	1.0	3.0	22	6.0 J	3.0	10	NA	14	4.6	2.6	3.2	2.2	2.5	1.3	1.3	1.7	NA
Chloride	mg/L	247	197	168	165	158	130 B	150	140	210	270	300J	310	320	350	400 J	390	460	NA	390	340	290 B	230	170	160 B	150	150 B	140	NA
Permanent Gases																													
Carbon Dioxide	mg/L	41.85	57.12	50.12	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Oxygen	mg/L	4.43	1.01	1.24	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nitrogen	mg/L	20.87	17.07	17.13	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methane	mg/L	0.0099	0.0027	0.0033	0.0037	0.039	0.0050	0.0088	0.002	0.46	0.0021	0.0022	0.0014	< 0.0065 U	0.025	7.5	0.79	25	NA	19	1.3	0.0090	0.22	0.54	1.2	0.46	0.72	0.21	0.60
Carbon Monoxide	mg/L	<0.40 U	<0.40 U	<0.40 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Light Hydrocarbon Scan																													
Ethane	ng/L	71	104	139	184	210	300	350	410	730	170	80	48	<250 U	730	7,800	550	11,000	NA	9,300	870	53	85	91	160	37 J	14 J	57 J	77 J
Ethene	ng/L	55	45	43	36	61	34	27	130	770	78	45	51	<220 U	550	22,000	30,000	<120 U	NA	72	1,800	760	590	600	330	180	180	390	140
Field Parameters																													
pH	S.U.	7.05	7.05	7.00	7.19	7.14	7.28	7.31	7.09	7.02	6.71	6.93	7.13	5.97	6.84	7.03	7.1	6.93	6.78	7.47	6.33	7.11	8.43	6.85	6.95	6.92	6.64	7.11	6.91
Specific Conductivity	umhos/cm	1,500	1,784	1,548	1,235	1,097	1,190	1,350	1,052	1,474	1,706	1,726	1,970	1,940	2,150	2,010	2,290	1,951	2,370	1,986	2,150	1,377	1,539	1,280	1,280	1,180	1,180	1,130	1,127
Dissolved Oxygen	mg/L	0.92	0.30	1.94	1.36	0.96	1.75	0.06	0.9	0.47	2.01	1.87	0.0	0.0	0.3	0.43	1.87	0.33	0.80	0.67	2.08	0.54	0.54	0.32	0	2.16	3.72	0	1.32
Redox Potential	mV	31.3	149.6	200.1	187.7	320.8	195.6	13	446.3	259.6	178.3	135	160	122	-82	-145	-153	-137.9	-157	-112.5	-150	-26	-64.1	-79	-151	-133	-138	-143	-40.7
Temperature	°C	20.85	18.69	20.80	20.09	20.14	19.24	19.1	20.39	20.36	20.22	19.57	18.6	17.6	17.9	17.5	16.9	16.68	17.73	16.43	17.82	23.90	19.80	15.30	16.37	17.37	17.41	16.87	17.3

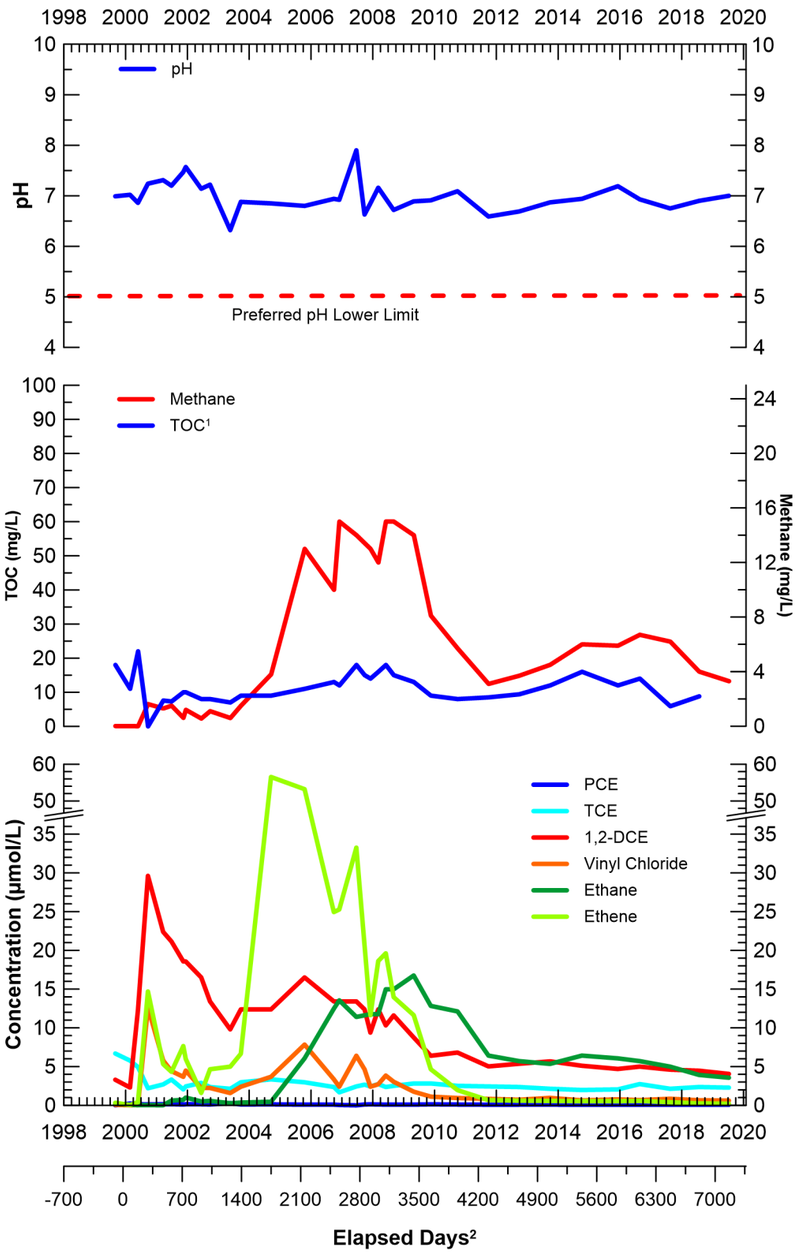
NOTES:
mg/L - Milligrams per Liter.
ng/L - Nanograms per Liter.
S.U. - Standard Units.
umhos/cm - Micromohs per Centimeter.
mV - Millivolts.
°C - Degrees Celsius.
J - Value is estimated.
B - Blank Contamination.
NA - Not Analyzed.
< - Constituent not detected above laboratory reporting limit.
U - Constituent not detected above laboratory reporting limit shown.
Samples collected in September 1999 represent baseline conditions.
Carbon source introductions began in December 1999.

FIGURES

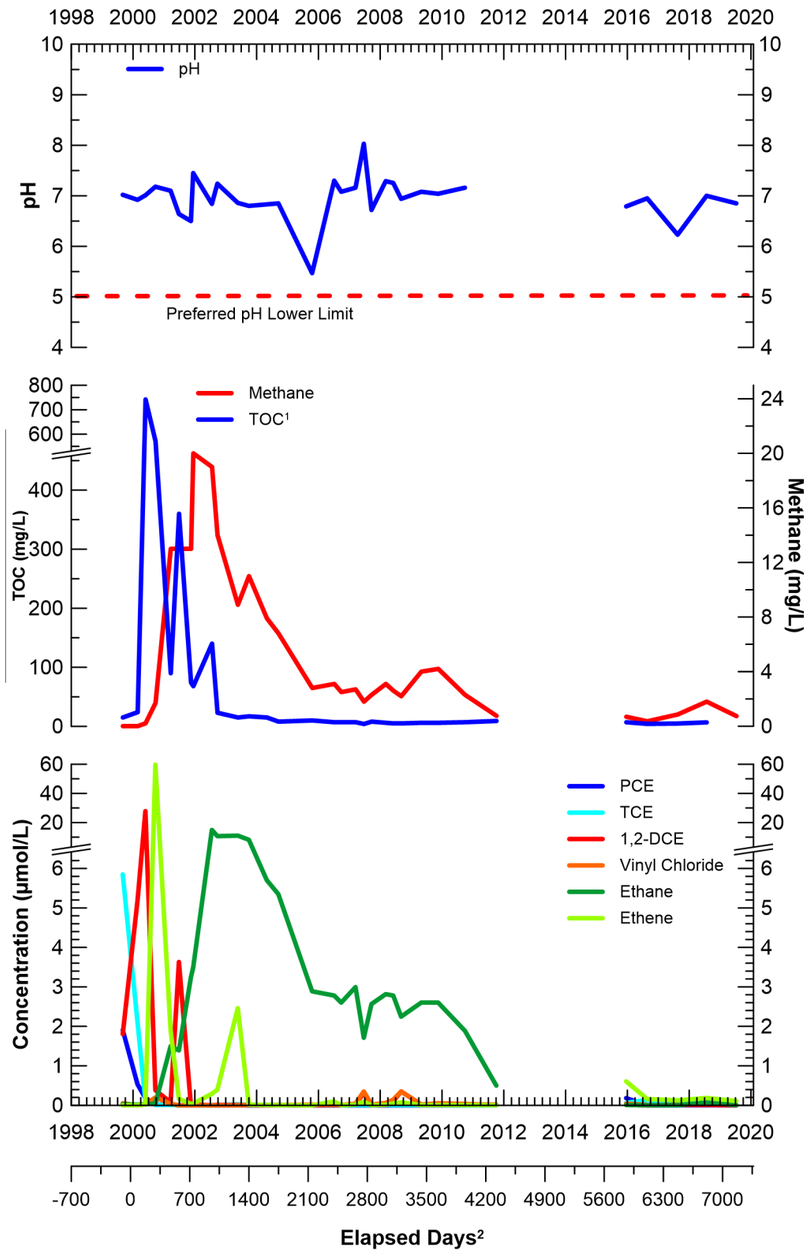
GM-23 (Source Area)



GM-29 (Downgradient)



GM-28 and GM-28R[3] (Downgradient)



1 - TOC breakthrough is 20 mg/L.
2 - Days since RZ-1 ERD implementation.
3 - GM-28 has not been sampled since 2011 due to an obstruction in the well. GM-28R was installed in 2015 as a replacement for GM-28.
ERD - Enhanced reductive dechlorination.

pH - Negative logarithm of the hydrogen-ion concentration.
mg/L - Milligram per liter.
µmol/L - Micromoles per liter.
TOC - Total organic carbon.
PCE - Tetrachloroethene.
TCE - Trichloroethene.
1,2-DCE - cis and trans-1,2-Dichloroethene.

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RZ-1 ERD ANALYSIS
(GM-23, GM-29, GM-28, GM-28R)

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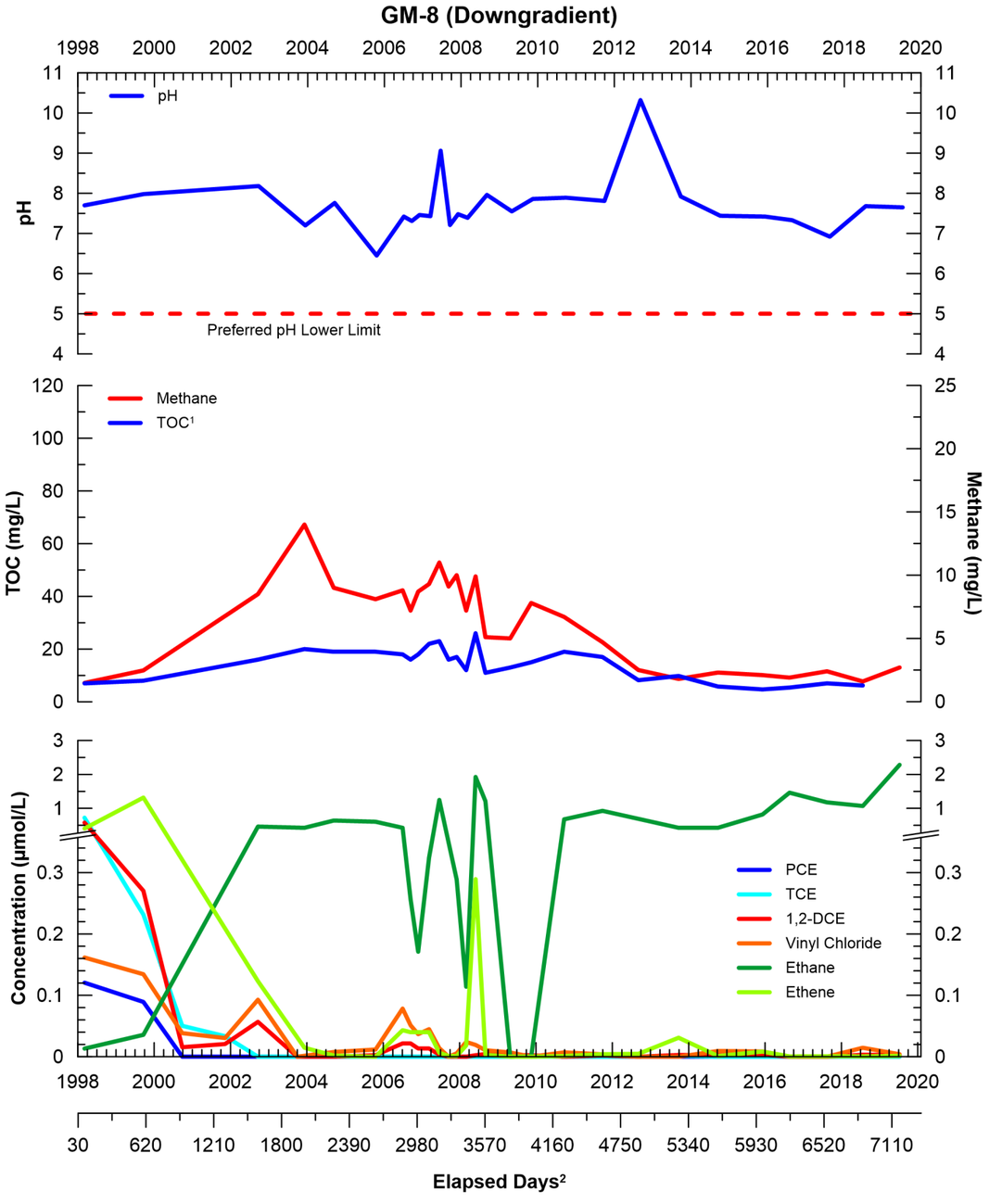
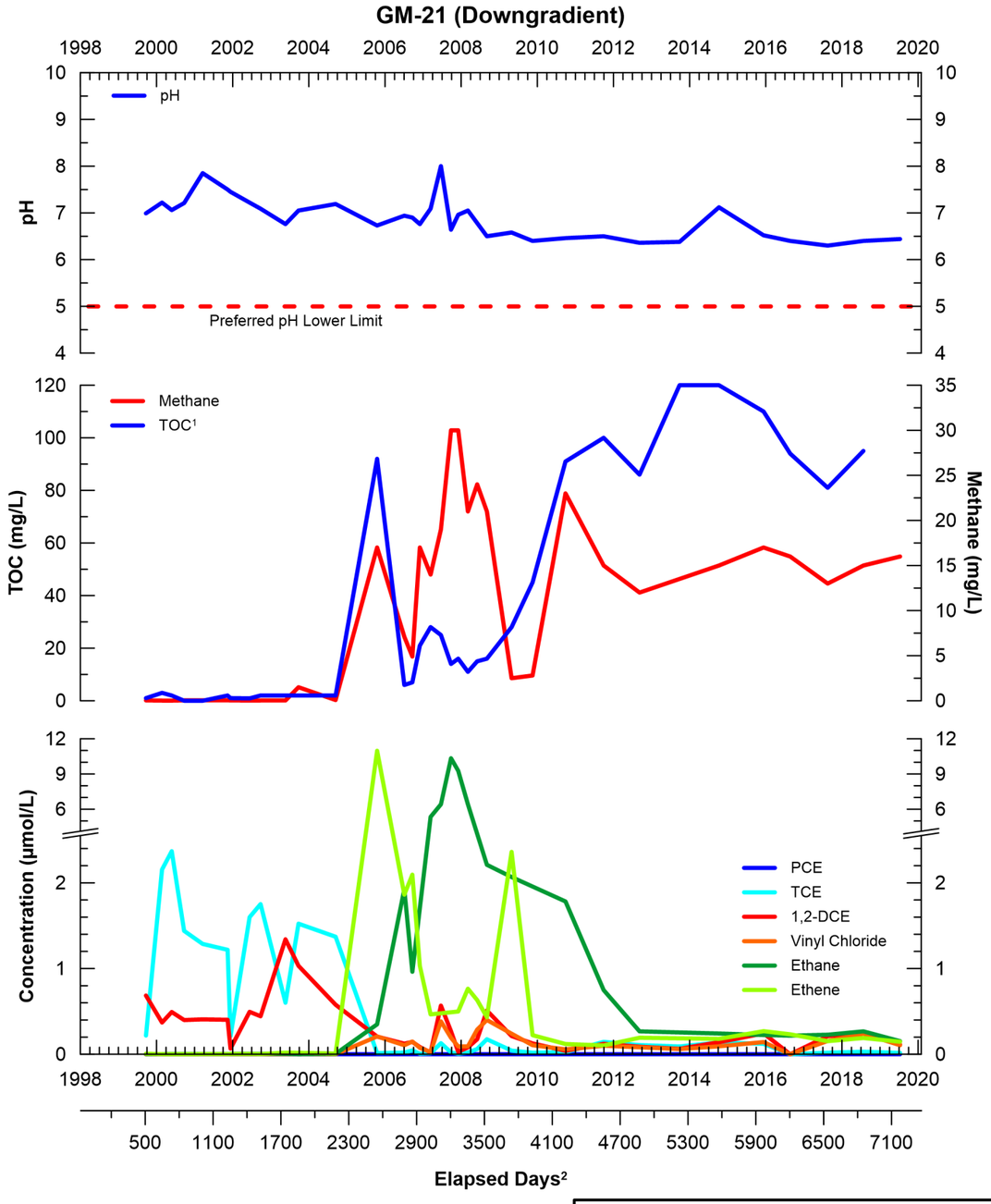
FIGURE
A-1





1 - TOC breakthrough is 20 mg/L.
2 - Days since RZ-3 ERD implementation.
ERD - Enhanced reductive dechlorination.
pH - Negative logarithm of the hydrogen-ion concentration.
mg/L - Milligram per liter.
µmol/L - micromoles per liter.
TOC - Total organic carbon.
PCE - Tetrachloroethene.
TCE - Trichloroethene.
1,2-DCE - cis and trans-1,2-Dichloroethene.

Note: Ethene, ethane, and methane parameters were not collected during the 2013 annual groundwater sampling event at GM-21.

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RZ-3 WEST/EAST ERD ANALYSIS
GM-8 (WEST), GM-21(EAST)

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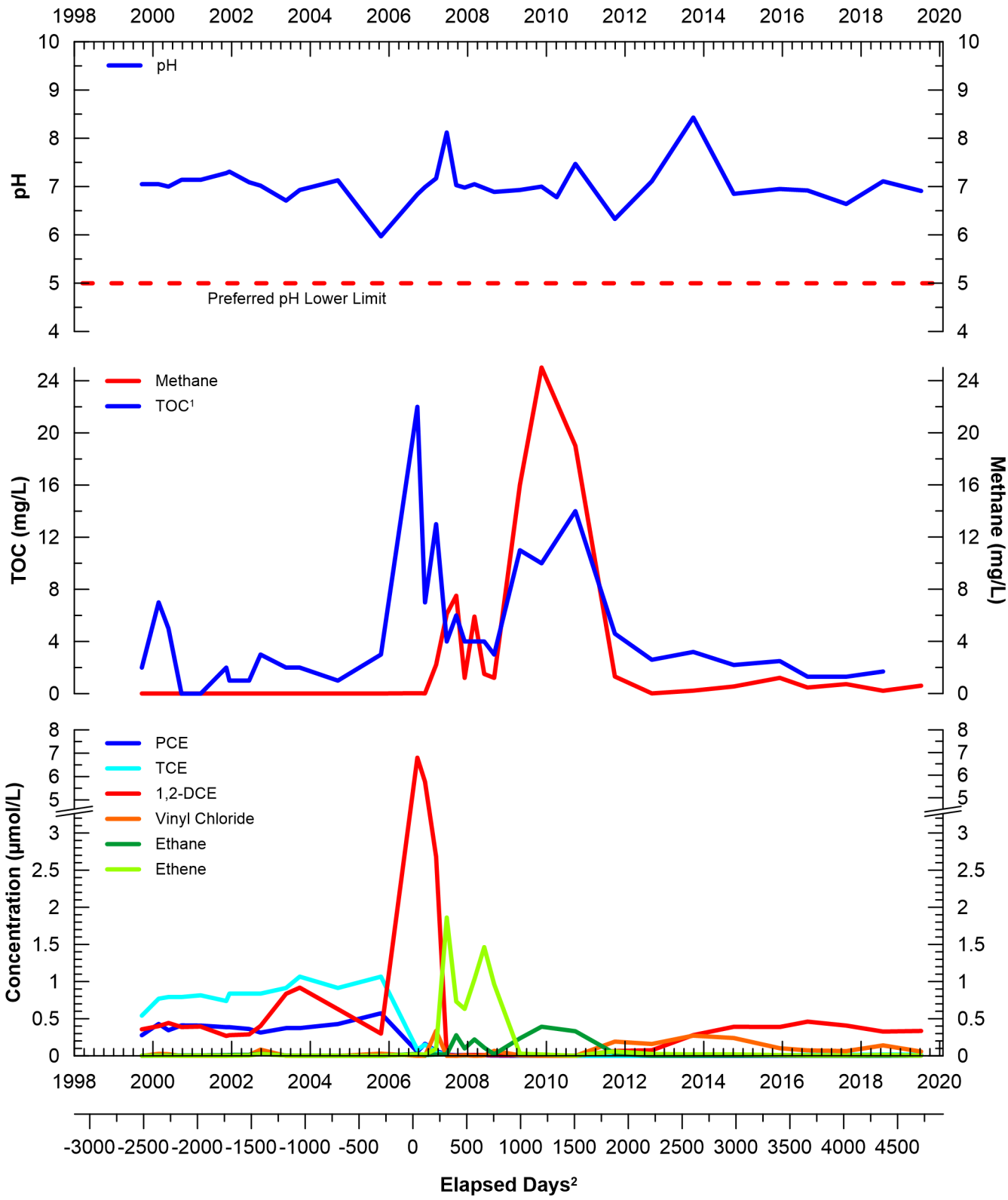
FIGURE
A-2



1 - TOC breakthrough is 20 mg/L.
2 - Days since RZ-4 ERD implementation.
ERD - Enhanced reductive dechlorination.
pH - Negative logarithm of the hydrogen-ion concentration.
mg/L - Milligram per liter.
µmol/L - micromoles per liter.
TOC - Total organic carbon.
PCE - Tetrachloroethene.
TCE - Trichloroethene.
cis-1,2-DCE - cis-1,2-Dichloroethene.

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OH000294.2019

RZ-4 ERD ANALYSIS
(GM-19S - DOWNGRADIENT)

ARCADIS Design & Consultancy for natural and built assets

FIGURE
A-3

APPENDIX B

Annual Groundwater Sampling Event

Field Parameters Data Sheet for 2019

Appendix B
Annual Groundwater Sampling Event Field Parameters Data Sheet for 2019
RACER Trust Moraine Facilities
Moraine, Ohio

ARCADIS Design & Consultancy for natural and built assets

Well ID	*Sample ID*	pH (s.u.)	Temp (°C)	ORP (mV)	Conductivity (mS/cm)	DO (mg/L)	Purge Rate (L/min)	Time Start Purge	Time End Purge	Volume Purged (L)	Sample Date	Time Sampled	Sampler
Upper Aquifer Wells													
GM-2 Annual	GM-2/07122019/	7.04	15.20	143	0.900	0.48	0.379	7:50	8:20	11.4	7/12/2019	8:40	S. Clark
GM-6 Annual	GM-6/07112019/	7.00	17.00	-69	1.250	0.19	0.333	16:00	16:30	10.0	7/11/2019	16:30	A. von Clausburg
GM-8 Annual	GM-8/07112019/	7.65	16.30	-156	1.030	0.28	0.379	16:15	16:50	13.2	7/11/2019	17:15	S. Clark
GM-16 Annual	GM-16/07082019/	6.92	16.00	65	1.178	0.91	0.373	12:29	13:30	22.0	7/8/2019	13:30	A. von Clausburg
GM-19S Annual	GM-19S/07122019/	6.91	17.30	-41	1.127	1.32	0.288	8:00	8:40	11.5	7/12/2019	8:40	A. von Clausburg
GM-21 Annual	GM-21/07122019/	6.44	17.20	-44	1.740	0.81	0.379	11:25	11:55	11.4	7/12/2019	12:15	S. Clark
GM-23 Annual	GM-23/07122019/	6.94	17.30	-61	0.890	0.43	0.284	17:45	16:15	8.5	7/12/2019	16:35	S. Clark
GM-27 Annual	GM-27/07122019/	7.17	17.60	8	1.034	0.17	0.289	15:35	16:20	13.0	7/12/2019	16:20	A. von Clausburg
GM-28R Annual	GM-28R/07122019/	6.85	17.50	-87	0.574	0.12	0.473	10:10	10:50	18.9	7/12/2019	10:50	A. von Clausburg
GM-29 Annual	GM-29/07122019/	6.71	19.40	-96	1.092	0.29	0.336	11:55	12:40	15.1	7/12/2019	12:40	A. von Clausburg
GM-32 Annual	GM-32/07112019/	7.07	17.80	-94	0.870	0.69	0.158	13:50	14:20	4.7	7/22/2019	14:35	S. Clark
GM-47 Annual	GM-47/07102019/	6.91	15.90	180	1.165	0.49	0.340	9:10	9:35	8.5	7/10/2019	9:35	A. von Clausburg
GM-48 Annual	GM-48/07102019/	6.84	18.10	180	0.585	3.64	0.300	12:40	12:55	4.5	7/10/2019	12:55	A. von Clausburg
GM-49 Annual	GM-49/07102019/	8.15	17.30	171	0.796	4.23	0.200	14:05	14:50	9.0	7/10/2019	14:50	A. von Clausburg
GM-50 Annual	GM-50/07102019/	6.93	16.30	99	1.063	0.19	0.340	8:05	8:30	8.5	7/10/2019	8:30	A. von Clausburg
GM-51 Annual	GM-51/07102019/	6.74	17.70	151	0.890	1.09	0.360	11:30	11:55	9.0	7/10/2019	11:55	A. von Clausburg
GM-52 Annual	GM-52/07102019/	6.65	15.50	156	0.998	3.74	0.300	15:30	16:00	9.0	7/10/2019	16:00	A. von Clausburg
GM-63 Annual	GM-63/07102019/	6.97	17.30	160	1.400	0.29	0.284	11:05	11:35	8.5	7/10/2019	11:50	S. Clark
GM-64 Annual	GM-64/07102019/	7.02	17.10	-6	1.670	0.36	1.009	8:30	9:10	30.3	7/10/2019	9:25	S. Clark
GM-80 Annual	GM-80/03272019/	5.95	10.96	105	0.595	0.54	0.379	15:35	16:10	13.2	3/27/2019	16:15	D. Gossett
HR-4 Annual	HR-4/07092019/	6.96	16.00	92	1.420	0.35	0.442	12:50	13:20	13.2	7/9/2019	13:35	S. Clark
HR-16 Annual	HR-16/07092019/	6.98	16.60	165	1.082	0.47	0.283	11:20	11:50	8.5	7/9/2019	11:55	A. von Clausburg
HR-17 Annual	HR-17/07092019/	6.99	16.80	161	1.168	0.48	0.384	8:20	8:45	9.6	7/9/2019	8:45	A. von Clausburg
RMW-91 Annual	RMW-91/07112019/	7.15	18.20	187	1.220	4.23	0.325	12:25	13:05	13.0	7/11/2019	13:05	A. von Clausburg
RMW-92 Annual	RMW-92/07112019/	6.91	17.70	136	1.051	0.72	0.380	13:35	14:00	9.5	7/11/2019	14:00	A. von Clausburg
RMW-93 Annual	RMW-93/07112019/	6.85	16.00	274	1.128	2.15	0.505	9:20	9:50	15.1	7/11/2019	9:50	A. von Clausburg
RMW-94 Annual	RMW-94/07112019/	6.95	16.90	265	1.068	0.52	0.244	10:30	11:10	9.8	7/11/2019	11:10	A. von Clausburg
RMW-95 Annual	RMW-95/03272019/	6.36	11.55	143	0.648	2.14	0.516	10:25	11:20	28.4	3/27/2019	11:25	D. Gossett
RMW-96 Annual	RMW-96/03272019/	6.43	11.53	100	0.609	2.20	0.589	12:15	13:00	26.5	3/27/2019	13:05	D. Gossett
RMW-97 Annual	RMW-97/03272019/	6.48	10.58	108	0.507	2.84	0.355	13:50	14:30	14.2	3/27/2019	14:35	D. Gossett
RMW-98 Annual	RMW-98/07102019/	7.02	17.50	66	0.830	0.41	0.213	17:40	18:20	8.5	7/10/2019	18:40	S. Clark
RMW-99 Annual	RMW-99/07102019/	7.01	16.60	247	0.780	0.81	0.331	16:10	16:50	13.2	7/10/2019	17:05	S. Clark
RMW-100 Annual	RMW-100/07082019/	7.36	15.40	-72	1.050	0.14	0.967	15:15	16:00	43.5	7/8/2019	16:15	S. Clark
RMW-101 Annual	RMW-101/07082019/	7.22	14.60	251	0.900	0.76	0.589	13:00	13:45	26.5	7/8/2019	14:05	S. Clark
RMW-102 Annual	RMW-102/07082019/	7.15	17.30	185	0.556	5.16	0.258	14:10	15:10	15.5	7/8/2019	15:10	A. von Clausburg
W-2-N Annual	W-2-N/07092019/	7.14	18.70	-26	1.630	2.85	0.730	15:00	15:35	25.6	7/9/2019	15:50	S. Clark
W-3-N Annual	W-3-N/07092019/	6.98	16.40	-81	1.650	0.40	0.688	19:15	20:20	37.9	7/9/2019	20:35	S. Clark
W-4-N Annual	W-4-N/07092019/	6.95	15.70	3	1.750	0.68	0.852	17:25	17:55	25.6	7/9/2019	18:15	S. Clark
W-2-S Annual	W-2-S/07092019/	6.85	17.20	161	1.240	0.53	0.267	16:00	16:30	8.0	7/9/2019	16:30	A. von Clausburg
W-3-S Annual	W-3-S/07092019/	6.85	16.30	148	1.144	0.22	0.250	14:55	15:20	6.3	7/9/2019	15:20	A. von Clausburg
W-4-S Annual	W-4-S/07092019/	6.82	15.90	130	1.275	0.20	0.379	13:10	13:40	11.4	7/9/2019	13:40	A. von Clausburg
WSU-23 Annual	WSU-23/07102019/	7.02	16.50	201	0.910	1.22	0.379	13:30	14:00	12.3	7/10/2019	14:20	S. Clark
Lower Aquifer Wells													
DN-13 Annual	DN-13/07112019/	7.19	18.30	181	0.880	3.30	--	--	--	--	7/11/2019	12:25	S. Clark
GM-9 Annual	GM-9/07112019/	7.18	19.40	182	0.740	0.79	0.189	11:00	11:25	4.7	7/11/2019	11:40	S. Clark
GM-15 Annual	GM-15/07082019/	6.71	15.80	14	1.162	0.16	0.478	16:05	16:50	21.5	7/8/2019	16:50	A. von Clausburg
GM-20D Annual	GM-20D/07112019/	7.06	18.40	173	0.820	0.87	0.126	9:20	9:50	3.8	7/11/2019	10:05	S. Clark

NOTES:
ºC - Degrees Celsius.
DO - Dissolved Oxygen.
L/min - Liters per Minute.
L - Liters.
mg/L - Milligrams per Liter.
mS/cm - Millisiemens per Centimeter.
mV - Millivolts.
NM - Not Measured.
ORP - Oxidation Reduction Potential.
s.u. - Standard Units.
Temp - Temperature.

APPENDIX C

Groundwater Analytical Database for 2019

Appendix C
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RACER Trust Moraine Facilities
Moraine, Ohio

	Units	MCL[1]	Downgradient Reactive Zone Performance Wells									
			GM-2 7/12/2019 Upper Aquifer	GM-6 7/11/2019 Upper Aquifer	GM-8 7/11/2019 Upper Aquifer	GM-19S 7/12/2019 Upper Aquifer	GM-21 7/12/2019 Upper Aquifer	GM-23 7/12/2019 Upper Aquifer	GM-27 7/12/2019 Upper Aquifer	GM-28R 7/12/2019 Upper Aquifer	GM-29 7/12/2019 Upper Aquifer	GM-32 7/11/2019 Upper Aquifer
Site-Specific Volatile Organic Compounds												
1,1,1-Trichloroethane	ug/L	200	0.33 J	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 40 U	< 1.0 U	< 1.0 U	8.4 J	< 1.0 U
1,1-Dichloroethane	ug/L		< 1.0 U	0.23 J	0.40 J	1.9	6.3	< 40 U	0.54 J	< 1.0 U	9.2 J	0.45 J
1,1-Dichloroethene	ug/L	7	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 40 U	< 1.0 U	< 1.0 U	< 13 U	< 1.0 U
Benzene	ug/L	5	< 1.0 U	< 1.0 U	1.6	< 1.0 U	< 1.0 U	< 40 U	< 1.0 U	< 1.0 U	< 13 U	< 1.0 U
cis-1,2-Dichloroethene	ug/L	70	0.33 J	0.38 J	0.27 J	32	10	**550**	9.0	1.1	**380**	0.34 J
Ethylbenzene	ug/L	700	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 40 U	< 1.0 U	< 1.0 U	< 13 U	< 1.0 U
Tetrachloroethene	ug/L	5	**28**	< 1.0 U	< 1.0 U	1.0	< 1.0 U	**22 J**	0.59 J	**13**	**11 J**	< 1.0 U
Toluene	ug/L	1,000	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 40 U	< 1.0 U	< 1.0 U	< 13 U	< 1.0 U
trans-1,2-Dichloroethene	ug/L	100	< 1.0 U	< 1.0 U	< 1.0 U	0.52 J	1.0	16 J	0.37 J	< 1.0 U	13	< 1.0 U
Trichloroethene	ug/L	5	**7.4**	< 1.0 U	< 1.0 U	2.3	2.1	**15 J**	**18**	0.35 J	**300**	< 1.0 U
Vinyl chloride	ug/L	2	< 1.0 U	0.25 J	0.25 J	**3.6**	**6.6**	**250**	0.31 J	< 1.0 U	**38**	0.26 J
Xylene (total)	ug/L	10,000	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 80 U	< 2.0 U	< 2.0 U	< 27 U	< 2.0 U
Total Site-Specific VOCs	ug/L		36	0.9	2.5	41	26	853	29	14	760	1.1

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ug/L - Micrograms per Liter.

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Appendix C
Groundwater Analytical Database for 2019
RACER Trust Moraine Facilities
Moraine, Ohio

	Units	MCL[1]	Closed North Settling Lagoon Monitoring Results				Closed South Settling Lagoon Monitoring Results			
			HR-4 7/9/2019 Upper Aquifer	W-2-N 7/9/2019 Upper Aquifer	W-3-N 7/9/2019 Upper Aquifer	W-4-N 7/9/2019 Upper Aquifer	HR-17 7/9/2019 Upper Aquifer	W-2-S 7/9/2019 Upper Aquifer	W-3-S 7/9/2019 Upper Aquifer	W-4-S 7/9/2019 Upper Aquifer
Site-Specific Volatile Organic Compounds										
1,1,1-Trichloroethane	ug/L	200	2.2	< 1.0 U	< 1.0 U	< 1.0 U	7.4	0.60 J	2.5	1.7
1,1-Dichloroethane	ug/L		1.7	0.19 J	< 1.0 U	7.6	1.6	0.23 J	0.83 J	1.6
1,1-Dichloroethene	ug/L	7	0.19 J	< 1.0 U	< 1.0 U	< 1.0 U	0.54 J	< 1.0 U	< 1.0 U	< 1.0 U
Benzene	ug/L	5	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
cis-1,2-Dichloroethene	ug/L	70	0.56 J	1.8	14	6.6	1.2	0.29 J	1.1	13
Ethylbenzene	ug/L	700	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Tetrachloroethene	ug/L	5	0.22 J	< 1.0 U	< 1.0 U	0.72 J	**150**	**20**	**81**	**70**
Toluene	ug/L	1,000	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
trans-1,2-Dichloroethene	ug/L	100	< 1.0 U	0.22 J	0.23 J	0.88 J	< 1.0 U	< 1.0 U	< 1.0 U	1.2
Trichloroethene	ug/L	5	0.29 J	1.1	< 1.0 U	**9.2**	1.7	2.8	**5.6**	**33**
Vinyl chloride	ug/L	2	< 1.0 U	< 1.0 U	0.81 J	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Xylene (total)	ug/L	10,000	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U
Total Site-Specific VOCs	ug/L		5.2	3.3	15	25	162	24	91	121

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Appendix C
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RACER Trust Moraine Facilities
Moraine, Ohio

	Units	MCL[1]	Downgradient On-Site Monitoring Wells					Downgradient Off-Site Monitoring Wells		
			HR-16 7/9/2019 Upper Aquifer	RMW-91 7/11/2019 Upper Aquifer	RMW-92 7/11/2019 Upper Aquifer	RMW-93 7/11/2019 Upper Aquifer	RMW-94 7/11/2019 Upper Aquifer	GM-9 7/11/2019 Lower Aquifer	GM-15 7/8/2019 Lower Aquifer	GM-16 7/8/2019 Upper Aquifer
Site-Specific Volatile Organic Compounds										
1,1,1-Trichloroethane	ug/L	200	0.36 J	1.8 J	1.6	2.0 J	1.2 J	0.51 J	< 1.0 U	< 1.0 U
1,1-Dichloroethane	ug/L		0.75 J	2.5 J	0.55 J	0.66 J	0.39 J	< 1.0 U	2.3	0.54 J
1,1-Dichloroethene	ug/L	7	< 1.0 U	< 5.0 U	< 1.0 U	< 2.5 U	< 1.7 U	< 1.0 U	< 1.0 U	< 1.0 U
Benzene	ug/L	5	< 1.0 U	< 5.0 U	< 1.0 U	< 2.5 U	< 1.7 U	< 1.0 U	< 1.0 U	< 1.0 U
cis-1,2-Dichloroethene	ug/L	70	0.62 J	25	0.83 J	1.7 J	0.40 J	< 1.0 U	9.4	5.6
Ethylbenzene	ug/L	700	< 1.0 U	< 5.0 U	< 1.0 U	< 2.5 U	< 1.7 U	< 1.0 U	< 1.0 U	< 1.0 U
Tetrachloroethene	ug/L	5	0.17 J	**130**	**57**	**90**	**58**	< 1.0 U	< 1.0 U	**13**
Toluene	ug/L	1,000	< 1.0 U	< 5.0 U	< 1.0 U	< 2.5 U	< 1.7 U	< 1.0 U	< 1.0 U	< 1.0 U
trans-1,2-Dichloroethene	ug/L	100	0.21 J	2.3 J	< 1.0 U	< 2.5 U	< 1.7 U	< 1.0 U	0.68 J	< 1.0 U
Trichloroethene	ug/L	5	2.9	**62**	1.1	**7.2**	0.71 J	**6.0**	**5.7**	3.0
Vinyl chloride	ug/L	2	< 1.0 U	< 5.0 U	< 1.0 U	< 2.5 U	< 1.7 U	< 1.0 U	0.68 J	0.45 J
Xylene (total)	ug/L	10,000	< 2.0 U	< 10 U	< 2.0 U	< 5.0 U	< 3.3 U	< 2.0 U	< 2.0 U	< 2.0 U
Total Site-Specific VOCs	ug/L		5	224	61	102	61	6.5	19	23

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Appendix C
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RACER Trust Moraine Facilities
Moraine, Ohio

	Units	MCL[1]	Downgradient Off-Site Monitoring Wells									
			GM-20D 7/11/2019 Lower Aquifer	GM-47 7/10/2019 Upper Aquifer	GM-48 7/10/2019 Upper Aquifer	GM-49 7/10/2019 Upper Aquifer	GM-50 7/10/2019 Upper Aquifer	GM-51 7/10/2019 Upper Aquifer	GM-52 7/10/2019 Upper Aquifer	GM-63 7/10/2019 Upper Aquifer	GM-64 7/10/2019 Upper Aquifer	GM-80 3/27/2019 Upper Aquifer
Site-Specific Volatile Organic Compounds												
1,1,1-Trichloroethane	ug/L	200	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	0.65 J	< 1.0 U
1,1-Dichloroethane	ug/L		< 1.0 U	5.2	0.19 J	0.21 J	7.4	1.9	< 1.0 U	1.6	2.5	< 1.0 U
1,1-Dichloroethene	ug/L	7	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Benzene	ug/L	5	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
cis-1,2-Dichloroethene	ug/L	70	< 1.0 U	29	0.89 J	< 1.0 U	7.4	6.1	< 1.0 U	2.6	40	0.76 J
Ethylbenzene	ug/L	700	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Tetrachloroethene	ug/L	5	0.37 J	**40**	**28**	1.2	2.2	**44**	**15**	**12**	**15**	**15**
Toluene	ug/L	1,000	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
trans-1,2-Dichloroethene	ug/L	100	< 1.0 U	0.81 J	< 1.0 U	< 1.0 U	0.20 J	0.22 J	< 1.0 U	< 1.0 U	0.87 J	< 1.0 U
Trichloroethene	ug/L	5	0.48 J	**9.3**	1.3	2.4	0.39 J	5.0	0.83 J	3.7	**31**	3.6 B
Vinyl chloride	ug/L	2	< 1.0 U	0.60 J	< 1.0 U	< 1.0 U	1.8	< 1.0 U	< 1.0 U	0.31 J	1.3	< 1.0 U
Xylene (total)	ug/L	10,000	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U
Total Site-Specific VOCs	ug/L		0.9	85	30	3.8	19	57	16	20	91	19

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Groundwater Analytical Database for 2019
RACER Trust Moraine Facilities
Moraine, Ohio

	Units	MCL[1]	Downgradient Off-Site Monitoring Wells									
			RMW-95 3/27/2019 Upper Aquifer	RMW-96 3/27/2019 Upper Aquifer	RMW-97 3/27/2019 Upper Aquifer	RMW-100 7/8/2019 Upper Aquifer	RMW-101 7/8/2019 Upper Aquifer	RMW-102 7/8/2019 Upper Aquifer	RMW-98 7/10/2019 Upper Aquifer	RMW-99 7/10/2019 Upper Aquifer	WSU-23 7/10/2019 Upper Aquifer	DN-13 7/11/2019 Lower Aquifer
Site-Specific Volatile Organic Compounds												
1,1,1-Trichloroethane	ug/L	200	0.43 J	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	1.2	0.77 J	1.7	0.66 J
1,1-Dichloroethane	ug/L		0.35 J	< 1.0 U	< 1.0 U	0.82 J	1.3	< 1.0 U	1.6	2.1	0.86 J	1.0
1,1-Dichloroethene	ug/L	7	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Benzene	ug/L	5	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	0.13 J	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
cis-1,2-Dichloroethene	ug/L	70	0.24 J	0.43 J	< 1.0 U	1.8	6.7	< 1.0 U	6.8	2.9	0.77 J	4.4
Ethylbenzene	ug/L	700	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Tetrachloroethene	ug/L	5	2.6	2.0	2.8	< 1.0 U	0.49 J	**14**	**35**	**35**	**28**	0.87 J
Toluene	ug/L	1,000	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
trans-1,2-Dichloroethene	ug/L	100	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	0.30 J	< 1.0 U	0.29 J	< 1.0 U	< 1.0 U	0.23 J
Trichloroethene	ug/L	5	0.63 JB	0.44 JB	0.26 JB	< 1.0 U	1.9	0.39 J	**8.5**	2.3	3.7	**5.6**
Vinyl chloride	ug/L	2	< 1.0 U	< 1.0 U	< 1.0 U	0.50 J	0.61 J	< 1.0 U	0.27 J	0.26 J	< 1.0 U	0.30 J
Xylene (total)	ug/L	10,000	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U
Total Site-Specific VOCs	ug/L		4.3	2.9	3.1	3.1	11	14	54	43	35	13

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Groundwater Analytical Database for 2019
RACER Trust Moraine Facilities
Moraine, Ohio

	Units	MCL[1]	DUPLICATE (GM-28R) 7/12/2019 QAQC	DUPLICATE (HR-04) 7/9/2019 QAQC	DUPLICATE (RMW-91) 7/11/2019 QAQC	DUPLICATE (RMW-96) 3/27/2019 QAQC	EQUIPMENT BLANK 7/8/2019 QAQC	EQUIPMENT BLANK 7/9/2019 QAQC	EQUIPMENT BLANK 7/10/2019 QAQC	EQUIPMENT BLANK 7/10/2019 QAQC	EQUIPMENT BLANK 7/11/2019 QAQC
Site-Specific Volatile Organic Compounds											
1,1,1-Trichloroethane	ug/L	200	< 1.0 U	2.3	1.8 J	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
1,1-Dichloroethane	ug/L		< 1.0 U	1.8	2.5 J	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
1,1-Dichloroethene	ug/L	7	< 1.0 U	< 1.0 U	< 5.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Benzene	ug/L	5	< 1.0 U	< 1.0 U	< 5.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
cis-1,2-Dichloroethene	ug/L	70	1.1	0.62 J	25	0.46 J	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Ethylbenzene	ug/L	700	< 1.0 U	< 1.0 U	< 5.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Tetrachloroethene	ug/L	5	**13**	0.26 J	**130**	2.3	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Toluene	ug/L	1,000	< 1.0 U	< 1.0 U	< 5.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
trans-1,2-Dichloroethene	ug/L	100	< 1.0 U	< 1.0 U	2.2 J	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Trichloroethene	ug/L	5	0.32 J	0.40 J	**67**	0.47 JB	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Vinyl chloride	ug/L	2	< 1.0 U	< 1.0 U	< 5.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Xylene (total)	ug/L	10,000	< 2.0 U	< 2.0 U	< 10 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U
Total Site-Specific VOCs	ug/L		14	5	229	3	Not Detected	Not Detected	Not Detected	Not Detected	Not Detected

NOTES:

< - Constituent not detected above laboratory reporting limit shown.

[1] - An MCL is not listed for 1,1-dichloroethane.

The QA/QC results for 2019 data are shown in Appendix D.

BOLD - Result above MCL.

ug/L - Micrograms per Liter.

MCL - Maximum Contaminant Level.

B - Compound was found in the blank and sample.

J - Value is estimated.

U - Constituent not detected above laboratory reporting limit shown.

Appendix C
Groundwater Analytical Database for 2019
RACER Trust Moraine Facilities
Moraine, Ohio

	Units	MCL[1]	EQUIPMENT BLANK 7/11/2019 QAQC	EQUIPMENT BLANK 7/12/2019 QAQC	EQUIPMENT BLANK 7/12/2019 QAQC	Trip Blank 3/27/2019 QAQC	Trip Blank 7/11/2019 QAQC	Trip Blank 7/12/2019 QAQC	Trip Blank 7/12/2019 QAQC	Trip Blank 7/12/2019 QAQC	Trip Blank 7/12/2019 QAQC
Site-Specific Volatile Organic Compounds											
1,1,1-Trichloroethane	ug/L	200	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
1,1-Dichloroethane	ug/L		< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
1,1-Dichloroethene	ug/L	7	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Benzene	ug/L	5	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
cis-1,2-Dichloroethene	ug/L	70	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Ethylbenzene	ug/L	700	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Tetrachloroethene	ug/L	5	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Toluene	ug/L	1,000	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
trans-1,2-Dichloroethene	ug/L	100	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Trichloroethene	ug/L	5	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Vinyl chloride	ug/L	2	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Xylene (total)	ug/L	10,000	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U
Total Site-Specific VOCs	ug/L		Not Detected	Not Detected	Not Detected	Not Detected	Not Detected	Not Detected	Not Detected	Not Detected	Not Detected

NOTES:

< - Constituent not detected above laboratory reporting limit shown.

[1] - An MCL is not listed for 1,1-dichloroethane.

The QA/QC results for 2019 data are shown in Appendix D.

BOLD - Result above MCL.

ug/L - Micrograms per Liter.

MCL - Maximum Contaminant Level.

B - Compound was found in the blank and sample.

J - Value is estimated.

U - Constituent not detected above laboratory reporting limit shown.

APPENDIX D

Groundwater VOC Analytical Results from 1999 to 2019

Table D-1
Groundwater VOC Analytical Results for the Upper Aquifer Wells from 1999 to 2019
RACER Trust Moraine Facilities
Moraine, Ohio

Well	Date	VOCs (ug/L)											
		1,1,1-TCA	1,1-DCA	1,1-DCE	Benzene	cis-1,2-DCE	Ethyl-benzene	PCE	Toluene	trans-1,2-DCE	TCE	Vinyl Chloride	Xylenes (total)
MCL		200		7	5	70	700	5	1000	100	5	2	10,000
Upgradient of the Site													
GM-24	9/23/1999	2.7	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
	12/11/2015	8.1	0.67 J	< 1.0 U	< 1.0 U	0.82 J	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	4.4	< 1.0 U	< 2.0 U
	8/16/2016	10	0.84 J	< 1.0 U	1.5	1.2	< 1.0 U	< 1.0 U	0.94 J	< 1.0 U	4.5	< 1.0 U	< 2.0 U
HR-11	9/14/1999	< 1.0 U	14	< 1.0 U	< 1.0 U	3.3	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
	9/18/2000	< 1.0 U	33	< 1.0 U	< 1.0 U	19	< 1.0 U	< 1.0 U	< 1.0 U	2.6	< 1.0 U	< 1.0 U	< 1.0 U
	11/6/2001	0.30 J	33	< 1.0 U	< 1.0 U	18	< 1.0 U	< 1.0 U	< 1.0 U	2.3	< 1.0 U	< 1.0 U	< 1.0 U
	9/26/2002	< 1.0 U	18	< 1.0 U	< 1.0 U	6.1	< 1.0 U	< 1.0 U	< 1.0 U	0.72	< 1.0 U	< 1.0 U	< 1.0 U
	9/18/2003	< 1.0 U	10	< 1.0 U	< 1.0 U	1.7	< 1.0 U	< 1.0 U	< 1.0 U	< 0.50 U	< 1.0 U	< 1.0 U	< 1.0 U
	9/15/2004	< 1.0 U	7.3	< 1.0 U	< 1.0 U	0.45 J	< 1.0 U	2.2	< 1.0 U	< 0.50 U	< 1.0 U	< 1.0 U	< 1.0 U
	10/17/2005	< 1.0 U	6.5	< 1.0 U	< 1.0 U	0.72 J	< 1.0 U	**6.0**	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 2.0 U
	9/25/2006	< 1.0 U	6.7	< 1.0 U	< 1.0 U	0.31 J	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 2.0 U
	9/19/2007	< 1.0 U	7.1	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 2.0 U
	9/25/2008	< 1.0 U	5.2	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 2.0 U
	9/26/2013	< 1.0 U	4.4	< 1.0 U	< 1.0 U	1.6	< 1.0 U	< 1.0 U	< 1.0 U	0.24 J	< 1.0 U	< 1.0 U	< 2.0 U
On-Site													
GM-6	9/20/1999	25	33	1.2	< 1.0 U	53	< 10 U	**81**	< 1.0 U	2.0	**78**	1.6	< 10 U
	9/26/2000	12	13	< 1.0 U	< 1.0 U	41	< 1.0 U	**52**	< 1.0 U	2.2	**57**	**3.7**	< 1.0 U
	11/9/2001	3.9	14	< 2.0 U	< 2.0 U	8.2	< 2.0 U	**14**	< 2.0 U	1.8	**48**	1.9J	< 2.0 U
	9/20/2002	1.4 J	60	< 2.0 U	2.2	43	< 2.0 U	**14**	< 2.0 U	8.6	**33**	**12**	< 2.0 U
	10/2/2003	0.19 J	20	< 1.0 U	1.0	13	0.22 J	**11**	< 1.0 U	2.5	**23**	**3.3**	< 1.0 U
	9/14/2004	< 1.0 U	18	< 1.0 U	1.7	10	< 1.0 U	2.6	< 1.0 U	1.9	**5.7**	**3.0**	< 1.0 U
	10/19/2005	< 1.0 U	21	< 1.0 U	0.49 J	20	< 1.0 U	0.34 J	< 1.0 U	2.1	1.4	**11**	< 2.0 U
	9/19/2006	< 1.0 U	16	< 1.0 U	< 1.0 U	18	< 1.0 U	< 1.0 U	< 1.0 U	1.6	0.35 J	**7.3**	< 2.0 U
	9/18/2007	< 1.0 U	26	< 1.0 U	0.42 J	16	< 1.0 U	< 1.0 U	< 1.0 U	2.6	0.34 J	**6.7**	< 2.0 U
	9/24/2008	< 1.0 U	< 8.0 U	< 1.0 U	1.2	6.7	< 1.0 U	< 1.0 U	< 1.0 U	1.3	< 1.0 U	**2.1**	< 2.0 U
	11/11/2009	< 1.0 U	6.9	< 1.0 U	1.3	3.4	< 1.0 U	< 1.0 U	< 1.0 U	0.68 J	3.8	1.2	< 2.0 U
	9/27/2010	< 1.0 U	6.2	< 1.0 U	1.1	4.9	< 1.0 U	0.38 J	< 1.0 U	0.89 J	**6.6**	1.6	< 2.0 U
	9/29/2011	< 1.0 U	4.5	< 1.0 U	1.0	3.7	< 1.0 U	< 1.0 U	< 1.0 U	0.84 J	< 1.0 U	1.5	< 2.0 U
	9/6/2012	< 1.0 U	< 1.0 U	< 1.0 U	2.5	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 2.0 U
	9/25/2013	< 1.0 U	0.66 J	< 1.0 U	< 1.0 U	1.9	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	0.26 J	0.79 J	< 2.0 U
	10/7/2014	< 1.0 U	0.36 J	< 1.0 U	< 1.0 U	0.23 J	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 2.0 U
	12/8/2015	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	0.26 J	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 2.0 U
	8/22/2016	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	0.29 J	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 2.0 U
	8/16/2017	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	0.33 J	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 2.0 U
	7/24/2018	< 1.0 U	0.26 J	< 1.0 U	< 1.0 U	0.40 J	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	0.65 J	< 2.0 U
	7/11/2019	< 1.0 U	0.23 J	< 1.0 U	< 1.0 U	0.38 J	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	0.25 J	< 2.0 U

Table D-1
Groundwater VOC Analytical Results for the Upper Aquifer Wells from 1999 to 2019
RACER Trust Moraine Facilities
Moraine, Ohio

Well	Date	VOCs (ug/L)											
		1,1,1-TCA	1,1-DCA	1,1-DCE	Benzene	cis-1,2-DCE	Ethyl-benzene	PCE	Toluene	trans-1,2-DCE	TCE	Vinyl Chloride	Xylenes (total)
MCL		200		7	5	70	700	5	1000	100	5	2	10,000
GM-8	9/20/1999	1.9	30.2	< 1.0 U	3.4	26.2	20.7	14.8	< 1.0 U	12	30.4	8.4	2.3
	9/26/2000	< 1.0 U	37	< 1.0 U	1.1	1.5	13	< 1.0 U	< 1.0 U	5.4	**6.6**	**2.4**	1.9
	11/9/2001	0.40 J	40	< 1.0 U	0.78 J	2.0	0.40 J	< 1.0 U	< 1.0 U	3.6	4.4	1.9	0.39J
	9/20/2002	< 2.0 U	63	< 2.0 U	**5.5**	5.5	7.5	< 2.0 U	1.8 J	9	< 2.0 U	**5.8**	1.5J
	10/1/2003	< 2.0 U	48	< 2.0 U	**5.4**	< 1.0 U	11	< 2.0 U	< 2.0 U	4.4	< 2.0 U	< 2.0 U	< 2.0 U
	9/14/2004	< 1.0 U	15	< 1.0 U	4.2	< 0.50 U	19	< 1.0 U	< 1.0 U	1.1	< 1.0 U	0.48 J	1.1
	10/19/2005	< 1.0 U	16	< 1.0 U	3.5	0.24 J	29	< 1.0 U	0.39 J	0.99 J	< 1.0 U	0.73 J	< 2.0 U
	9/19/2006	< 5.0 U	18	< 5.0 U	2.1 J	2.1 J	< 5.0 U	< 5.0 U	< 5.0 U	1.0 J	< 5.0 U	**3.2 J**	< 1.0 U
	9/18/2007	< 2.0 U	9.1	< 2.0 U	2.4	< 2.0 U	1.7 J	< 2.0 U	< 2.0 U	0.9 J	< 2.0 U	< 2.0 U	0.9 J
	9/23/2008	< 1.0 U	1.7	< 1.0 U	**6.8**	< 1.0 U	8.6	< 1.0 U	< 1.0 U	0.27 J	< 1.0 U	0.48 J	3.9
	11/16/2009	< 1.0 U	2.9	< 1.0 U	3.9	< 1.0 U	5.5	0.34 J	0.13 J	0.22 J	< 1.0 U	< 1.0 U	1.3 J
	9/27/2010	< 1.0 U	3.0	< 1.0 U	4.7	< 1.0 U	0.33 J	< 1.0 U	0.18 J	0.29 J	< 1.0 U	0.44 J	< 2.0 U
	9/29/2011	< 1.0 U	1.9	< 1.0 U	3.5	< 1.0 U	5.4	< 1.0 U	< 1.0 U	0.20 J	< 1.0 U	0.24 J	0.99 J
	9/6/2012	< 1.0 U	0.66 J	< 1.0 U	3.5	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 2.0 U
	9/26/2013	< 1.0 U	0.88 J	< 1.0 U	1.9	0.27 J	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	0.21 J	< 1.0 U	< 2.0 U
	10/7/2014	< 1.0 U	0.59 J	< 1.0 U	1.2	0.23 J	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	0.58 J	< 2.0 U
	12/8/2015	< 1.0 U	0.43 J	< 1.0 U	< 1.0 U	0.31 J	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	0.53 J	< 2.0 U
	8/22/2016	< 1.0 U	0.37 J	< 1.0 U	0.79 J	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 2.0 U
	8/16/2017	< 1.0 U	0.44 J	< 1.0 U	0.86 J	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	0.31 J
	7/24/2018	< 1.0 U	0.47 J	< 1.0 U	1.3	0.30 J	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	0.91 J	< 2.0 U
	7/11/2019	< 1.0 U	0.40 J	< 1.0 U	1.6	0.27 J	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	0.25 J	< 2.0 U
GM-19S	9/20/1999	16	7.7	1.0	< 1.0 U	35	< 10	**46**	< 1.0 U	2.3	**71**	< 1.0 U	< 10
	9/22/2000	15	4.4	< 1.0 U	< 1.0 U	38	< 1.0 U	**68**	< 1.0 U	2.6	**104**	< 1.0 U	< 1.0 U
	11/12/2001	7.6	2.9J	< 3.3 U	< 3.3 U	26	< 3.3 U	**64**	< 3.3 U	2.0	**97**	< 3.3 U	< 3.3 U
	9/26/2002	6.3	6.3	< 4.0 U	< 4.0 U	39	< 4.0 U	**52**	< 4.0 U	2.7	**110**	**5.2**	< 4.0 U
	9/25/2003	13	8.3	1.6 J	< 5.0 U	**89**	< 5.0 U	**62**	< 5.0 U	2.9	**140**	< 5.0 U	< 5.0 U
	9/13/2004	14	8.1	1.9 J	< 4.0 U	61	< 4.0 U	**71**	< 4.0 U	2.4	**120**	< 4.0 U	< 4.0 U
	10/18/2005	13	9.0	1.2 J	< 1.0 U	29	< 1.0 U	**95**	< 1.0 U	1.0 J	**140**	1.8	< 3.3 U
	9/21/2006	9.7 J	7.0 J	< 22 U	< 22 U	**660**	< 22 U	**9.1 J**	< 22 U	10 J	**11 J**	< 22 U	< 4.0 U
	9/17/2007	0.59 J	10	< 1.0 U	< 1.0 U	0.30 J	< 1.0 U	1.5	< 1.0 U	0.29 J	0.46 J	< 1.0 U	< 2.0 U
	9/23/2008	< 1.0 U	13	< 1.0 U	< 1.0 U	0.68 J	< 1.0 U	0.94 J	< 1.0 U	0.52 J	3.0	**9.3**	< 2.0 U
	11/17/2009	< 1.0 U	12	< 1.0 U	< 1.0 U	0.27 J	< 1.0 U	< 1.0 U	< 1.0 U	0.37 J	0.22 J	< 1.0 U	< 2.0 U
	4/7/2010	< 1.0 U	9.6	< 1.0 U	< 1.0 U	0.27 J	< 1.0 U	< 1.0 U	< 1.0 U	0.45 J	< 1.0 U	< 1.0 U	< 2.0 U
	9/27/2010	< 1.0 U	9.5	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	0.46 J	< 1.0 U	< 1.0 U	< 2.0 U
	9/29/2011	< 1.0 U	10	< 1.0 U	< 1.0 U	5.3	< 1.0 U	< 1.0 U	< 1.0 U	1.1	< 1.0 U	**12**	< 2.0 U
	9/6/2012	< 1.0 U	8.4	< 1.0 U	< 1.0 U	7.3	< 1.0 U	< 1.0 U	< 1.0 U	0.84 J	0.30 J	**10**	< 2.0 U
	9/26/2013	< 1.0 U	8.3	< 1.0 U	< 1.0 U	26	< 1.0 U	< 1.0 U	< 1.0 U	1.1	0.46 J	**17**	< 2.0 U
	10/7/2014	< 1.0 U	7.6	< 1.0 U	< 1.0 U	37	< 1.0 U	< 1.0 U	< 1.0 U	0.91 J	0.81 J	**15**	< 2.9 U
	12/8/2015	< 1.0 U	3.1	< 1.0 U	< 1.0 U	37	< 1.0 U	< 1.0 U	< 1.0 U	0.66 J	1.3	**6.4**	< 2.0 U
	8/22/2016	< 1.0 U	3.4	< 1.0 U	< 1.0 U	44	< 1.0 U	< 1.0 U	< 1.0 U	0.64 J	1.8	**4.6**	< 2.0 U
	8/17/2017	< 1.0 U	2.3	< 1.0 U	< 1.0 U	39	< 1.0 U	< 1.0 U	< 1.0 U	0.52 J	1.9	**4**	< 2.0 U
	7/24/2018	< 1.0 U	2.3	< 1.0 U	< 1.0 U	31	< 1.0 U	0.37 J	< 1.0 U	0.66 J	2.4	**8.8**	< 2.0 U
	7/12/2019	< 1.0 U	1.9	< 1.0 U	< 1.0 U	32	< 1.0 U	1.0	< 1.0 U	0.52 J	2.3	**3.6**	< 2.0 U

Table D-1
Groundwater VOC Analytical Results for the Upper Aquifer Wells from 1999 to 2019
RACER Trust Moraine Facilities
Moraine, Ohio

Well	Date	VOCs (ug/L)											
		1,1,1-TCA	1,1-DCA	1,1-DCE	Benzene	cis-1,2-DCE	Ethyl-benzene	PCE	Toluene	trans-1,2-DCE	TCE	Vinyl Chloride	Xylenes (total)
MCL		200		7	5	70	700	5	1000	100	5	2	10,000
GM-21	9/22/1999	53	9.0	3.9	< 1.0 U	66	< 1.0 U	< 1.0 U	< 1.0 U	7.8	**29**	< 1.0 U	< 1.0 U
	9/22/2000	16	5.6	1.6	< 1.0 U	39	< 1.0 U	< 1.0 U	< 1.0 U	13	**189**	< 1.0 U	< 1.0 U
	11/13/2001	6.9	3.8 J	< 5.0 U	< 5.0 U	39	< 5.0 U	< 5.0 U	< 5.0 U	15	**160**	< 5.0 U	< 5.0 U
	9/25/2002	31	5.0 J	2.6 J	< 6.7 U	43	< 6.7 U	< 6.7 U	< 6.7 U	5.1	**230**	< 6.7 U	< 6.7 U
	9/24/2003	31	6.9 J	2.0 J	< 8.0 U	**100**	< 8.0 U	< 8.0 U	< 8.0 U	2.9 J	**200**	< 8.0 U	< 8.0 U
	9/14/2004	26	4.2 J	3.1 J	< 9.1 U	56	< 9.1 U	< 9.1 U	< 9.1 U	7.9	**180**	< 9.1 U	< 9.1 U
	10/17/2005	4.3	3.4	< 1.0 U	< 1.0 U	20	< 1.0 U	< 1.0 U	< 1.0 U	22	1.8	**13**	< 2.0 U
	9/20/2006	12	8.6	0.19 J	< 1.0 U	14	< 1.0 U	< 1.0 U	< 1.0 U	4.3	**5.9**	**9.3**	< 2.0 U
	9/26/2007	8.5	18	<1.4 U	<1.4 U	26	<1.4 U	<1.4 U	<1.4 U	2.5	2.8	**12**	< 2.9 U
	10/3/2008	8.7	15	0.33 J	< 1.0 U	38	< 1.0 U	0.56 J	< 1.0 U	4.7	**18**	**19**	< 2.9 U
	11/16/2009	2.4	22	< 1.0 U	< 1.0 U	7.8	< 1.0 U	< 1.0 U	< 1.0 U	4.4	2.4	**6.6**	< 2.0 U
	9/28/2010	0.75 J	20	< 1.0 U	< 1.0 U	3.9	< 1.0 U	< 1.0 U	< 1.0 U	3	3.2	**3.6**	< 2.0 U
	9/29/2011	1.0	16	< 1.0 U	< 1.0 U	9.9	< 1.0 U	< 1.0 U	< 1.0 U	1.9	**19**	**6.2**	< 2.0 U
	9/7/2012	< 2.0 U	18	< 2.0 U	< 2.0 U	8.5	< 2.0 U	< 2.0 U	< 2.0 U	1.7 J	**14**	**5.1**	< 4.0 U
	9/26/2013	< 1.0 U	9.5	< 1.0 U	< 1.0 U	5.1	< 1.0 U	< 1.0 U	< 1.0 U	1.1	**12**	**3.8**	< 2.0 U
	10/9/2014	< 1.0 U	16	< 1.0 U	< 1.0 U	12	< 1.0 U	< 1.0 U	< 1.0 U	1.6	**18**	**5.8**	< 2.0 U
	12/11/2015	< 2.0 U	12	< 2.0 U	< 2.0 U	22	< 2.0 U	< 2.0 U	< 2.0 U	1.6 J	**16**	**8.9**	< 4.0 U
	8/22/2016	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 2.0 U
	8/17/2017	< 1.0 U	11	< 1.0 U	< 1.0 U	19	< 1.0 U	< 1.0 U	< 1.0 U	1.5	2.4	**9.7**	< 2.0 U
	7/25/2018	< 1.0 U	9.3	< 1.0 U	< 1.0 U	23	< 1.0 U	< 1.0 U	< 1.0 U	1.6	3.9	**15**	< 2.0 U
	7/12/2019	< 1.0 U	6.3	< 1.0 U	< 1.0 U	10	< 1.0 U	< 1.0 U	< 1.0 U	1.0	2.1	**6.6**	< 2.0 U
GM-22	9/1/1999	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	3.6	< 1.0 U	< 1.0 U	4.0	< 1.0 U	< 1.0 U
	9/21/2000	< 1.0 U	2.4	< 1.0 U	< 1.0 U	1.9	< 1.0 U	1.6	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
	11/13/2001	4.4	6.8	0.58J	< 1.0 U	8.5	< 1.0 U	4.9	< 1.0 U	0.17 J	**7.5**	0.60 J	< 1.0 U
	9/25/2002	0.93 J	< 2.0 U	< 2.0 U	< 2.0 U	< 1.0 U	< 2.0 U	2.3	< 2.0 U	< 1.0 U	**7.6**	< 2.0 U	< 2.0 U
	9/24/2003	1.2	1.0	< 1.0 U	< 1.0 U	0.45 J	< 1.0 U	2.9	< 1.0 U	< 0.50 U	**7.6**	< 1.0 U	< 1.0 U
	9/14/2004	1.7	2.1	< 1.0 U	< 1.0 U	0.9	< 1.0 U	2.9	< 1.0 U	< 0.50 U	**10**	< 1.0 U	< 1.0 U
	10/17/2005	0.96 J	1.0	< 1.0 U	< 1.0 U	0.36 J	< 1.0 U	3.6	< 1.0 U	< 1.0 U	4.7	< 1.0 U	< 2.0 U
	9/20/2006	0.47 J	1.1	< 1.0 U	< 1.0 U	0.28 J	< 1.0 U	3.2	< 1.0 U	< 1.0 U	3.0	< 1.0 U	< 2.0 U
	9/26/2007	0.66 J	0.72 J	< 1.0 U	< 1.0 U	0.24 J	< 1.0 U	3.3	< 1.0 U	< 1.0 U	3.3	< 1.0 U	< 2.0 U
	10/3/2008	0.73 J	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	**5.7**	< 1.0 U	< 1.0 U	**5.7**	< 1.0 U	< 2.0 U
	9/26/2013	0.65 J	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	4.3	< 1.0 U	< 1.0 U	3.9	< 1.0 U	< 2.0 U

Table D-1
Groundwater VOC Analytical Results for the Upper Aquifer Wells from 1999 to 2019
RACER Trust Moraine Facilities
Moraine, Ohio

Well	Date	VOCs (ug/L)											
		1,1,1-TCA	1,1-DCA	1,1-DCE	Benzene	cis-1,2-DCE	Ethyl-benzene	PCE	Toluene	trans-1,2-DCE	TCE	Vinyl Chloride	Xylenes (total)
MCL		200		7	5	70	700	5	1000	100	5	2	10,000
GM-23	9/2/1999	7.2	33	**17**	1.9	**7530**	< 1.0 U	**6250**	< 1.0 U	55	**1460**	**2500**	7.0
	9/20/2000	2.0	16	5.1	< 1.0 U	**5620**	< 1.0 U	**3470**	< 1.0 U	33	**609**	**801**	< 1.0 U
	11/12/2001	< 4.0 U20	< 4.0 U20	< 4.0 U20	< 4.0 U20	**8400**	< 4.0 U20	**15000**	< 4.0 U20	< 210	**2200**	**1200**	< 4.0 U20
	9/26/2002	< 4.0 U0	< 4.0 U0	< 4.0 U0	< 4.0 U0	**7700**	< 4.0 U0	**10000**	< 4.0 U0	< 200	**1700**	**540**	< 4.0 U0
	9/23/2003	< 50 U0 U	< 50 U0 U	< 50 U0 U	< 50 U0 U	**5800**	< 50 U0 U	**12000**	< 50 U0 U	< 250 U	**1600**	**690**	< 50 U0 U
	9/14/2004	< 50 U0 U	< 50 U0 U	< 50 U0 U	< 50 U0 U	**4600**	< 50 U0 U	**6700**	< 50 U0 U	< 250 U	**1100**	**870**	< 50 U0 U
	10/17/2005	< 560 U	< 560 U	< 560 U	< 560 U	**19000**	< 560 U	**2300**	< 560 U	< 560 U	**490 J**	**2800**	< 100 U
	9/28/2006	< 330 U	< 330 U	< 330 U	< 330 U	**11000**	< 330 U	**370**	< 330 U	**270 J**	**95 J**	**4100**	< 670 U
	9/27/2007	< 200 U	< 200 U	< 200 U	< 200 U	**4700**	< 200 U	**280**	< 200 U	**130 J**	**82 J**	**2600**	< 4.0 U0 U
	10/23/2008	< 62 U	< 62 U	< 62 U	< 62 U	**2000**	< 62 U	**71**	< 62 U	58 J	< 62 U	**2100**	< 1.0 U
	11/17/2009	< 20 U	5.0 J	< 20 U	< 20 U	**1100**	< 20 U	**19 J**	< 20 U	31	**8.3 J**	**1100**	< 4.0 U
	9/29/2010	< 22 U	< 22 U	< 22 U	< 22 U	**490**	< 22 U	**50**	< 22 U	16 J	**17 J**	**500**	< 4.0 U
	9/30/2011	< 20 U	< 20 U	< 20 U	< 20 U	**580**	< 20 U	**57**	< 20 U	21	**33**	**840**	< 4.0 U
	9/7/2012	< 25 U	< 25 U	< 25 U	< 25 U	**580**	< 25 U	**33**	< 25 U	21 J	**15 J**	**390**	< 50 U
	9/27/2013	< 1.0 U	2.6	1.7	0.28 J	**470**	< 1.0 U	**37**	< 1.0 U	15	**28**	**210**	< 2.0 U
	10/10/2014	< 1.0 U	8.4 J	< 1.0 U	< 1.0 U	**210**	< 1.0 U	3.6 J	< 1.0 U	20	**4.1 J**	**220**	< 20 U
	12/8/2015	< 1.0 U	15	0.47 J	0.69 J	**100**	< 1.0 U	0.58 J	< 1.0 U	13	5.0	**120**	< 2.0 U
	8/22/2016	< 2.0 U	8.6	1.1 J	< 2.0 U	**530**	< 2.0 U	**8.0**	< 2.0 U	18	**7.6**	**280**	< 4.0 U
	8/17/2017	< 2.0 U	5.4	1.4 J	< 2.0 U	**580**	< 2.0 U	**30**	< 2.0 U	22	**8.6**	**360**	< 4.0 U
	7/26/2018	< 1.0 U	8	0.81 J	0.47 J	**260**	< 1.0 U	**8.4**	0.16 J	16	**5**	**210**	< 2.0 U
	7/12/2019	< 40 U	< 40 U	< 40 U	< 40 U	**550**	< 40 U	**22 J**	< 40 U	16 J	**15 J**	**250**	< 80 U
GM-25	9/22/1999	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
	10/21/2010	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
GM-27	9/1/1999	< 1.0 U	2.4	< 1.0 U	< 1.0 U	21	< 1.0 U	1.7	< 1.0 U	< 1.0 U	**121**	< 1.0 U	< 1.0 U
	9/20/2000	< 1.0 U	2.2	< 1.0 U	< 1.0 U	14	< 1.0 U	1.2	< 1.0 U	< 1.0 U	**112**	< 1.0 U	< 1.0 U
	11/13/2001	< 3.3 U	1.8 J	< 3.3 U	< 3.3 U	13	< 3.3 U	**6.8**	< 3.3 U	< 1.0 U	**110**	< 3.3 U	< 3.3 U
	9/26/2002	< 3.3 U	1.7 J	< 3.3 U	< 3.3 U	14	< 3.3 U	< 3.3 U	< 3.3 U	< 1.0 U	**100**	< 3.3 U	< 3.3 U
	9/23/2003	< 5.0 U	1.9 J	< 5.0 U	< 5.0 U	12	< 5.0 U	2.1 J	< 5.0 U	< 2.5 U	**100**	< 5.0 U	< 5.0 U
	9/15/2004	< 3.3 U	2.0 J	< 3.3 U	< 3.3 U	13	< 3.3 U	1.8 J	< 3.3 U	< 1.0 U	**81**	< 3.3 U	< 3.3 U
	10/17/2005	< 2.5 U	2.2 J	< 2.5 U	< 2.5 U	14	< 2.5 U	0.94 J	< 2.5 U	0.49 J	**76**	0.82 J	< 5.0 U
	9/28/2006	< 2.5 U	2.6	< 2.5 U	< 2.5 U	14	< 2.5 U	1.0 J	< 2.5 U	1.0 J	**80**	< 2.5 U	< 5.0 U
	9/27/2007	< 2.0 U	2.3	< 2.0 U	< 2.0 U	12	< 2.0 U	0.9 J	< 2.0 U	0.41 J	**70**	< 2.0 U	< 4.0 U
	10/23/2008	< 1.0 U	2	< 1.0 U	< 1.0 U	11	< 1.0 U	0.9 J	< 1.0 U	0.51 J	**57**	0.44 J	< 2.9 U
	9/27/2013	< 1.0 U	2.3	< 1.0 U	< 1.0 U	12	< 1.0 U	1.8	< 1.0 UB	0.51 J	**42**	0.18 J	< 2.0 U
	7/12/2019	< 1.0 U	0.54 J	< 1.0 U	< 1.0 U	9.0	< 1.0 U	0.59 J	< 1.0 U	0.37 J	**18**	0.31 J	< 2.0 U

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RACER Trust Moraine Facilities
Moraine, Ohio

Well	Date	VOCs (ug/L)											
		1,1,1-TCA	1,1-DCA	1,1-DCE	Benzene	cis-1,2-DCE	Ethyl-benzene	PCE	Toluene	trans-1,2-DCE	TCE	Vinyl Chloride	Xylenes (total)
MCL		200		7	5	70	700	5	1000	100	5	2	10,000
GM-28	9/1/1999	18	3.3	< 1.0 U	< 1.0 U	**175**	< 1.0 U	**316**	< 1.0 U	9.2	**768**	**3.2**	< 1.0 U
	9/21/2000	5.0	9.9	< 1.0 U	< 1.0 U	37	< 1.0 U	2.3	< 1.0 U	22	1.6	**12**	< 1.0 U
	11/15/2001	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 5.0 U	< 1.0 U	< 1.0 U	< 1.0 U	11	< 1.0 U	< 1.0 U	< 1.0 U
	9/24/2002	< 1.0 U	2.7	< 1.0 U	< 1.0 U	1.1	< 1.0 U	< 1.0 U	< 1.0 U	11	0.86 J	< 1.0 U	< 1.0 U
	10/1/2003	< 1.0 U	3.3	< 1.0 U	< 1.0 U	0.58	< 1.0 U	< 1.0 U	< 1.0 U	4.0	1.6	0.53 J	< 1.0 U
	9/15/2004	< 1.0 U	3.3	< 1.0 U	< 1.0 U	0.41 J	< 1.0 U	0.88 J	< 1.0 U	1.2	1.4	0.44 J	< 1.0 U
	10/18/2005	< 1.0 U	4.0	< 1.0 U	< 1.0 U	0.32 J	< 1.0 U	< 1.0 U	< 1.0 U	0.63 J	0.66 J	1.1	< 2.0 U
	9/27/2006	< 1.0 U	4.2	< 1.0 U	< 1.0 U	0.26 J	< 1.0 U	< 1.0 U	< 1.0 U	0.66 J	0.43 J	0.42 J	< 2.0 U
	9/20/2007	< 1.0 U	4.6	< 1.0 U	< 1.0 U	0.72 J	< 1.0 U	< 1.0 U	< 1.0 U	0.58 J	0.51 J	1.2	< 2.0 U
	10/22/2008	< 5.0 U	2.2 J	< 5.0 U	< 5.0 U	6.9	< 5.0 U	< 5.0 U	< 5.0 U	1.3 J	< 5.0 U	**6.5**	< 1.0 U
	11/16/2009	< 1.0 U	3.6	< 1.0 U	< 1.0 U	2.3	< 1.0 U	< 1.0 U	< 1.0 U	1.7	0.58 J	**3.3**	< 2.0 U
	9/28/2010	< 1.0 U	4.6	< 1.0 U	< 1.0 U	2.1	< 1.0 U	< 1.0 U	< 1.0 U	1.5	< 1.0 U	**2.2**	< 2.0 U
	10/5/2011	< 1.0 U	2.1	< 1.0 U	< 1.0 U	0.72 J	< 1.0 U	0.63 J	< 1.0 U	0.69 J	0.41 J	0.57 J	< 2.0 U
GM-28R	12/28/2015	< 1.0 U	0.55 J	< 1.0 U	< 1.0 U	5.6	< 1.0 U	**49**	< 1.0 U	0.38 J	**24**	0.99 J	< 2.0 U
	8/22/2016	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	13	< 1.0 U	1.3	< 1.0 U	0.31 J	0.29 J	< 1.0 U	< 2.0 U
	8/17/2017	< 1.0 U	0.25 J	< 1.0 U	< 1.0 U	6.0	< 1.0 U	4.6	< 1.0 U	< 1.0 U	0.33 J	0.72 J	< 2.0 U
	7/25/2018	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	3.5	< 1.0 U	3.5	< 1.0 U	< 1.0 U	0.30 J	0.70 J	< 2.0 U
	7/12/2019	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	1.1	< 1.0 U	**13**	< 1.0 U	< 1.0 U	0.35 J	< 1.0 U	< 2.0 U
GM-29	9/1/1999	38	4.3	1.3	< 1.0 U	**320**	< 1.0 U	< 20 U	< 1.0 U	11	**878**	**3.8**	< 1.0 U
	9/21/2000	25	17	3.1	< 1.0 U	**2871**	< 1.0 U	**20**	2.2	14	**289**	**788**	< 1.0 U
	11/13/2001	< 50 U	< 50 U	< 50 U	< 50 U	**1800**	21 J	**17 J**	< 50 U	26	**270**	**230**	52
	9/25/2002	16 J	< 4.0 U	< 4.0 U	< 4.0 U	**1300**	< 4.0 U	**18 J**	< 4.0 U	21	**310**	**140**	< 4.0 U
	9/24/2003	18 J	< 33 U	< 33 U	< 33 U	**1200**	< 33 U	**18 J**	< 33 U	20	**390**	**150**	< 33 U
	9/15/2004	21 J	< 50 U	< 50 U	< 50 U	**1200**	< 50 U	**20 J**	< 50 U	21 J	**440**	**230**	< 50 U
	10/17/2005	19 J	18 J	< 50 U	< 50 U	**1600**	< 50 U	**15 J**	< 50 U	27 J	**390**	**490**	< 1.0 U
	9/28/2006	17 J	15 J	< 33 U	< 33 U	**1300**	< 33 U	**15 J**	< 33 U	20 J	**310**	**210**	< 67 U
	9/26/2007	15 J	15 J	< 50 U	< 50 U	**1200**	< 50 U	**18 J**	< 50 U	19 J	**350**	**290**	< 1.0 U
	10/6/2008	12 J	11 J	< 33 U	< 33 U	**900**	< 33 U	**17 J**	< 33 U	16 J	**300**	**150**	< 67 U
	11/17/2009	18	12	< 1.0 U	< 1.0 U	**600**	< 1.0 U	**21 J**	< 1.0 U	20	**370**	**70**	< 20 U
	9/29/2010	11 J	11 J	< 20 U	< 20 U	**660**	< 20 U	**17 J**	< 20 U	19 J	**330**	**59**	< 4.0 U
	9/30/2011	11 J	8.5 J	< 1.0 U	< 1.0 U	**470**	< 1.0 U	**13**	< 1.0 U	17	**320**	**52**	< 25 U
	9/26/2012	10 J	8.2 J	< 20 U	< 20 U	**520**	< 20 U	**14 J**	< 20 U	15 J	**310**	**45**	< 4.0 U
	9/27/2013	15	12	1.7	0.20 J	**530**	< 1.0 U	**15**	< 1.0 U	20	**280**	**60**	< 2.0 U
	10/9/2014	9.1 J	9.5 J	< 1.0 U	< 1.0 U	**480**	< 1.0 U	**12 J**	< 1.0 U	15	**260**	**40**	< 29 U
	12/8/2015	9.9	10	1.2 J	< 1.7 U	**440**	< 1.7 U	**11**	< 1.7 U	15	**270**	**48**	< 3.3 U
	8/22/2016	10	10	< 2.0 U	< 2.0 U	**470**	< 2.0 U	**13**	< 2.0 U	14	**360**	**42**	< 4.0 U
	8/17/2017	9.6	13	1.0 J	< 2.0 U	**430**	< 2.0 U	**11**	< 2.0 U	16	**280**	**53**	< 4.0 U
	7/25/2018	8.1	10	< 2.0 U	< 2.0 U	**420**	< 2.0 U	**13**	< 2.0 U	13	**310**	**41**	< 4.0 U
	7/12/2019	8.4 J	9.2 J	< 13 U	< 13 U	**380**	< 13 U	**11 J**	< 13 U	13	**300**	**38**	< 27 U

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Moraine, Ohio

Well	Date	VOCs (ug/L)											
		1,1,1-TCA	1,1-DCA	1,1-DCE	Benzene	cis-1,2-DCE	Ethyl-benzene	PCE	Toluene	trans-1,2-DCE	TCE	Vinyl Chloride	Xylenes (total)
MCL		200		7	5	70	700	5	1000	100	5	2	10,000
GM-30	9/2/1999	< 1.0 U	54 J	< 1.0 U	< 1.0 U	7.5 J	**7030 J**	**9.5 J**	**6950 J**	< 1.0 U	< 1.0 U	< 1.0 U	**23300 J**
	9/20/2000	< 1.0 U	50.6	< 1.0 U	2.7	< 1.0 U	**2290**	< 1.0 U	98.9	< 1.0 U	< 1.0 U	< 1.0 U	6770
	11/13/2001	< 25	31	< 25	< 25	< 1.0 U2	**840**	< 25	5.0 J	< 1.0 U2	**12 J**	< 25	2000
	9/27/2002	< 33	34	< 33	< 33	< 1.0 U7	350	< 33	< 33	< 1.0 U7	< 33	< 33	1400
	9/23/2003	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 62 U	**1000**	< 1.0 U	240	< 62 U	< 1.0 U	< 1.0 U	7000
	9/14/2004	< 4.0 U	33 J	< 4.0 U	< 4.0 U	< 20 U	530	< 4.0 U	< 4.0 U	< 20 U	< 4.0 U	< 4.0 U	3000
	10/17/2005	< 50 U	23 J	< 50 U	< 50 U	< 50 U	620	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U	3800
	9/20/2006	< 33 U	25 J	< 33 U	< 33 U	< 33 U	570	< 33 U	5.8 J	< 33 U	< 33 U	< 33 U	2500
	9/26/2007	< 1.0 U	16 J	< 1.0 U	< 1.0 U	< 1.0 U	380	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	1300
	10/6/2008	< 1.0 U	11	< 1.0 U	< 1.0 U	< 1.0 U	300	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	670
	9/27/2013	< 1.0 U	5.3	< 1.0 U	4.0	< 1.0 U	20	0.23 J	1.1	0.63 J	0.28 J	0.34 J	7.2
	10/9/2014	< 1.0 U	3.2	< 1.0 U	2.3	0.29 J	54	< 1.0 U	0.71 J	0.51 J	< 1.0 U	< 1.0 U	12
	12/11/2015	< 2.0 U	3	< 2.0 U	2.9	< 2.0 U	260	< 2.0 U	0.87 J	< 2.0 U	< 2.0 U	< 2.0 U	14
	8/26/2016	< 1.0 U	7.6	< 1.0 U	**8.9**	< 1.0 U	4.7	< 1.0 U	1.1	6.5	< 1.0 U	0.29 J	9.6
GM-31	9/1/1999	< 1.0 U	1.3	< 1.0 U	< 1.0 U	7.8	< 1.0 U	1.3	< 1.0 U	< 1.0 U	**27**	< 1.0 U	< 1.0 U
	9/21/2000	< 1.0 U	1.1	< 1.0 U	< 1.0 U	40	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	**8.5**	< 1.0 U	< 1.0 U
	11/15/2001	< 4.0 U	3.1 J	< 4.0 U	< 4.0 U	**120**	< 4.0 U	< 4.0 U	< 4.0 U	1.8J	**11**	**7.4**	< 4.0 U
	9/24/2002	< 6.0 U	5.9 J	< 6.0 U	< 6.0 U	**200**	< 6.0 U	< 6.0 U	< 6.0 U	3.5	**10**	**19**	< 6.0 U
	10/1/2003	< 5.0 U	6	< 5.0 U	< 5.0 U	**170**	< 5.0 U	< 5.0 U	< 5.0 U	3.5	**28**	**10**	< 5.0 U
	9/15/2004	1.4 J	4 J	< 5.0 U	< 5.0 U	**120**	< 5.0 U	2.5 J	< 5.0 U	2.7	**29**	**2.4 J**	< 5.0 U
	10/18/2005	3.4	6.2	0.42 J	< 2.0 U	**120**	< 2.0 U	< 2.0 U	< 2.0 U	3.7	**67**	**3.1**	< 4.0 U
	9/27/2006	2.3 J	5.1	< 4.0 U	< 4.0 U	**110**	< 4.0 U	< 4.0 U	< 4.0 U	2.9 J	**65**	1.2 J	< 8.0 U
	9/20/2007	3.7	4.8	< 3.3 U	< 3.3 U	**100**	< 3.3 U	< 3.3 U	< 3.3 U	2.8 J	**90**	1.1 J	< 6.7 U
	10/23/2008	2.9	3.2	< 2.5 U	< 2.5 U	**76**	< 2.5 U	< 2.5 U	< 2.5 U	3	**78**	0.9 J	< 5.0 U
	9/27/2013	9.8	2.3	< 1.0 U	< 1.0 U	21	< 1.0 U	0.43 J	< 1.0 U	1.2	**120**	< 1.0 U	< 2.0 U
	10/9/2014	3.8	2.8	< 2.0 U	< 2.0 U	54	< 2.0 U	0.48 J	< 2.0 U	1.6 J	**79**	< 2.0 U	< 4.0 U
	12/8/2015	2.9	2.5	< 1.0 U	< 1.0 U	48	< 1.0 U	< 1.0 U	< 1.0 U	1.5	**75**	0.64 J	< 2.0 U
GM-32	9/22/1999	< 1.0 U	3.3	< 1.0 U	< 1.0 U	2.6	< 1.0 U	1.2	1.0	4.2	3.2	**3.0**	< 1.0 U
	9/25/2000	< 1.0 U	36	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	10	20	< 1.0 U	< 1.0 U	< 1.0 U
	11/12/2001	< 5.0 U	6.2	< 5.0 U	4.3 J	< 2.5	0.79 J	< 5.0 U	12	2.9	< 5.0 U	1.1 J	3.0 J
	9/20/2002	< 1.0 U	9.7 J	< 1.0 U	< 1.0 U	< 5.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 5.0 U	< 1.0 U	< 1.0 U	< 1.0 U
	10/1/2003	< 2.0 U	5.5	< 2.0 U	1.5 J	< 1.0 U	< 2.0 U	< 2.0 U	< 2.0 U	1.0	< 2.0 U	< 2.0 U	< 2.0 U
	9/14/2004	< 1.0 U	3.0 J	< 1.0 U	< 1.0 U	< 5.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 5.0 U	< 1.0 U	< 1.0 U	< 1.0 U
	10/19/2005	< 1.0 U	4.9 J	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 20 U
	9/19/2006	< 1.0 U	3.7 J	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 20 U
	9/18/2007	< 5.0 U	4.3 J	< 5.0 U	1.6 J	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U	1.0 J	< 5.0 U	< 5.0 U	3.4 J
	9/23/2008	< 1.0 U	4.0 J	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 20 U
	7/11/2019	< 1.0 U	0.45 J	< 1.0 U	< 1.0 U	0.34 J	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	0.26 J	< 2.0 U

Table D-1
Groundwater VOC Analytical Results for the Upper Aquifer Wells from 1999 to 2019
RACER Trust Moraine Facilities
Moraine, Ohio

Well	Date	VOCs (ug/L)											
		1,1,1-TCA	1,1-DCA	1,1-DCE	Benzene	cis-1,2-DCE	Ethyl-benzene	PCE	Toluene	trans-1,2-DCE	TCE	Vinyl Chloride	Xylenes (total)
MCL		200		7	5	70	700	5	1000	100	5	2	10,000
GM-33	9/25/2003	21	8.4	1.0 J	< 2.5 U	19	< 2.5 U	**37**	< 2.5 U	0.72 J	**75**	< 2.5 U	< 2.5 U
	9/13/2004	17	5.4	1.1 J	< 2.0 U	9.5	< 2.0 U	**37**	< 2.0 U	0.45 J	**55**	< 2.0 U	< 2.0 U
	10/18/2005	18	6.4	0.69 J	< 1.0 U	7.4	< 1.0 U	**50**	< 1.0 U	0.36 J	**71**	1.0	< 2.0 U
	9/21/2006	18	4.5	1.1 J	< 1.0 U	6.9	< 1.0 U	**37**	< 1.0 U	0.44 J	**64**	< 1.0 U	< 3.3 U
	9/24/2007	15	4.9	0.68 J	< 1.0 U	5.5	< 1.0 U	**32**	< 1.0 U	0.34 J	**49**	< 1.0 U	< 3.3 U
	10/23/2008	8.4	2.9	0.58 J	< 1.0 U	4.1	< 1.0 U	**38**	< 1.0 U	< 1.0 U	**36**	< 1.0 U	< 2.9 U
	9/26/2013	3.4	1.1	< 1.0 U	< 1.0 U	1.3	< 1.0 U	**28**	< 1.0 U	< 1.0 U	**14**	< 1.0 U	< 2.0 U
	8/24/2015	0.61 J	< 1.0 U	< 1.0 U	< 1.0 U	0.44 J	< 1.0 U	**13**	< 1.0 U	< 1.0 U	**5.9**	< 1.0 U	< 2.0 U
GM-34	8/7/2002	4.8	2.7	< 1.0 U	< 1.0 U	3.0	< 1.0 U	**20**	< 1.0 U	0.4 J	**11**	< 1.0 U	< 1.0 U
GM-35	9/25/2003	17	46	4.0 J	< 8.0 U	**300**	< 8.0 U	**21**	< 8.0 U	12	**270**	**59**	< 8.0 U
	9/13/2004	17	36	4.1 J	< 1.0 U	**270**	< 1.0 U	**21**	< 1.0 U	9.1	**230**	**50**	< 1.0 U
	10/18/2005	12	36	1.8 J	< 5.0 U	**190**	< 5.0 U	**29**	< 5.0 U	9.3	**240**	**23**	< 1.0 U
	9/22/2006	5.5 J	26 J	< 5.0 UJ	< 5.0 UJ	**160 J**	< 5.0 UJ	**14 J**	< 5.0 UJ	11 J	**130 J**	**13 J**	< 1.0 UJ
	9/24/2007	5.8 J	26	< 1.0 U	< 1.0 U	**140**	< 1.0 U	**22**	< 1.0 U	8 J	**110**	**12**	< 20 U
	9/29/2008	4.6 J	20	< 1.0 U	< 1.0 U	**92**	< 1.0 U	**20**	< 1.0 U	9.4 J	**88**	**7.9 J**	< 20 U
	11/13/2009	4.7	17	1.0 J	< 3.3 U	**74**	< 3.3 U	**33**	< 3.3 U	8.2	**120**	**4.6**	< 6.7 U
	9/27/2010	4.8	19	0.97 J	< 4.0 U	**73**	< 4.0 U	**37**	< 4.0 U	8.9	**120**	**4.3**	< 8.0 U
	9/30/2011	2.6 J	20	0.64 J	< 3.3 U	66	< 3.3 U	**17**	< 3.3 U	11	**59**	**7.7**	< 6.7 U
	9/6/2012	< 20 U	27	< 20 U	< 20 U	**84**	< 20 U	< 20 U	< 20 U	17 J	**9.9 J**	**14 J**	< 4.0 U
	9/26/2013	< 50 U	30 J	< 50 U	< 50 U	69	< 50 U	< 50 U	< 50 U	18 J	**18 J**	**11 J**	< 1.0 U
	10/8/2014	< 25 U	22 J	< 25 U	< 25 U	57	< 25 U	**6.0 J**	< 25 U	14 J	**28**	< 25 U	< 50 U
	11/4/2015	4	34	3.7	0.52 J	**300**	< 1.0 U	**47**	< 1.0 U	19	**200**	**14**	< 2.0 U
	8/23/2016	<50 U	19 J	<50 U	<50 U	**120**	<50 U	**27 J**	<50 U	<50 U	**120**	<50 U	<100 U
GM-36	8/5/2002	5.5	21	< 2.0 U	< 2.0 U	55	< 2.0 U	**54**	< 2.0 U	1.6 J	**50**	< 2.0 U	< 2.0 U
GM-37	8/6/2002	17	7.1	0.98 J	< 2.5 U	41	< 2.5 U	**58**	< 2.5 U	1.6	**84**	< 2.5 U	< 2.5 U
	8/24/2015	2.0	0.65 J	< 1.0 U	< 1.0 U	5.9	< 1.0 U	**24**	< 1.0 U	< 1.0 U	**48**	< 1.0 U	< 2.0 U
GM-38	8/6/2002	6	6.5	< 2.0 U	< 2.0 U	22	< 2.0 U	**50**	< 2.0 U	1.0	**25**	< 2.0 U	< 2.0 U
GM-43	8/19/2004	< 9.1 U	6.9 J	< 9.1 U	< 9.1 U	**210**	< 9.1 U	**16**	< 9.1 U	8.7	**100**	**2.8 J**	< 9.1 U
	9/22/2006	< 5.0 UJ	3.7 J	< 5.0 UJ	< 5.0 UJ	**120 J**	< 5.0 UJ	**21 J**	< 5.0 UJ	5.7 J	**98 J**	< 5.0 UJ	< 1.0 UJ
	11/17/2009	2.5	5.7	0.74 J	<2.5 U	**150**	<2.5 U	**28 J**	<2.5 U	6.2	**180**	1.0 J	<5.0 U
	9/24/2010	< 8.0 U	6.8 J	< 8.0 U	< 8.0 U	**220**	< 8.0 U	**26**	< 8.0 U	8.1	**170**	< 8.0 U	< 1.0 U
	9/30/2011	< 4.0 U	4.2	1.0 J	< 4.0 U	**130**	< 4.0 U	**22**	< 4.0 U	5.3	**180**	1.0 J	< 8.0 U
	9/6/2012	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	**79**	< 1.0 U	**28**	< 1.0 U	4.1 J	**230**	< 1.0 U	< 20 U
	9/26/2013	1.0	2.0	< 1.0 U	< 1.0 U	32	< 1.0 U	**22**	< 1.0 U	3.7	**170**	0.21 J	< 2.0 U
	10/8/2014	1.8 J	< 5.7 U	< 5.7 U	< 5.7 U	25	< 5.7 U	**35**	< 5.7 U	1.5 J	**220**	< 5.7 U	< 1.0 U
	11/5/2015	1.4	0.63 J	< 1.0 U	< 1.0 U	14	< 1.0 U	**42**	< 1.0 U	0.89 J	**270**	< 1.0 U	< 2.0 U
	8/23/2016	1.6 J	0.72 J	< 2.0 U	< 2.0 U	11	< 2.0 U	**41**	< 2.0 U	0.83 J	**260**	< 2.0 U	< 4.0 U

Table D-1
Groundwater VOC Analytical Results for the Upper Aquifer Wells from 1999 to 2019
RACER Trust Moraine Facilities
Moraine, Ohio

Well	Date	VOCs (ug/L)											
		1,1,1-TCA	1,1-DCA	1,1-DCE	Benzene	cis-1,2-DCE	Ethyl-benzene	PCE	Toluene	trans-1,2-DCE	TCE	Vinyl Chloride	Xylenes (total)
MCL		200		7	5	70	700	5	1000	100	5	2	10,000
GM-44	8/19/2004	4 J	3.3 J	< 6.0 U	< 6.0 U	**130**	< 6.0 U	**57**	< 6.0 U	4.4	**140**	< 6.0 U	< 6.0 U
	4/9/2010	1.8 J	2.5 J	0.70 J	< 3.3 U	48	< 3.3 U	**70**	< 3.3 U	4.4	**110**	< 3.3 U	< 6.7 U
	10/8/2014	< 6.7 U	< 6.7 U	< 6.7 U	< 6.7 U	16	< 6.7 U	**100**	< 6.7 U	< 6.7 U	**180**	< 6.7 U	< 1.0 U
	11/5/2015	1.5	0.94 J	< 1.0 U	< 1.0 U	18	< 1.0 U	**110**	< 1.0 U	0.81 J	**180**	< 1.0 U	< 2.0 U
GM-45	8/19/2004	5.8 J	8.5 J	< 9.1 U	< 9.1 U	**79**	< 9.1 U	**220**	< 9.1 U	3.5 J	**220**	< 9.1 U	< 9.1 U
	9/22/2006	3.5 J	3.1 J	< 8.0 UJ	< 8.0 UJ	54 J	< 8.0 UJ	**230 J**	< 8.0 UJ	2.7 J	**230 J**	< 8.0 UJ	< 1.0 UJ
	4/9/2010	2.7 J	2.5 J	< 5.7 U	< 5.7 U	36	< 5.7 U	**200**	< 5.7 U	3.3 J	**180**	< 5.7 U	< 1.0 U
	10/8/2014	3.2 J	2.2 J	< 4.0 U	< 4.0 U	37	< 4.0 U	**150**	< 4.0 U	2.0 J	**140**	< 4.0 U	< 8.0 U
	11/4/2015	6.5	3.3	< 1.0 U	< 1.0 U	36	< 1.0 U	**190**	< 1.0 U	2.7	**180**	0.50 J	< 2.0 U
GM-46	3/2/2006	< 1.0 U	2.7	< 1.0 U	< 1.0 U	6.8	< 1.0 U	< 1.0 U	< 1.0 U	0.35 J	22	1.9	< 2.0 U
	11/30/2006	< 1.0 U	0.43 J	< 1.0 U	< 1.0 U	5.2	< 1.0 U	0.67 J	< 1.0 U	< 1.0 U	1.5	1.5	< 2.0 U
	10/9/2014	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	0.30 J	< 1.0 U	0.46 J	< 1.0 U	< 1.0 U	< 1.0 UB	< 1.0 U	< 2.0 U
	11/3/2015	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	0.41 J	< 1.0 U	0.47 J	< 1.0 U	< 1.0 U	0.30 J	< 1.0 U	< 2.0 U
GM-53	9/14/2006	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 2.0 U
GM-59	9/15/2006	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	4.0 J	< 1.0 U	**310**	< 1.0 U	< 1.0 U	**94**	< 1.0 U	< 29 U
	10/3/2008	< 33 U	< 33 U	< 33 U	< 33 U	41	< 33 U	**750**	< 33 U	< 33 U	**750**	< 33 U	< 67 U
	11/17/2009	< 6.7 U	< 6.7 U	< 6.7 U	< 6.7 U	3.3 J	< 6.7 U	**500 J**	< 6.7 U	< 6.7 U	**170**	< 6.7 U	< 1.0 U
	4/8/2010	< 8.0 U	< 8.0 U	< 8.0 U	< 8.0 U	2.9 J	< 8.0 U	**280**	< 8.0 U	< 8.0 U	**69**	< 8.0 U	< 1.0 U
	9/29/2010	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	5.7 J	< 1.0 U	**520**	< 1.0 U	< 1.0 U	**350**	< 1.0 U	< 31 U
	9/30/2011	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	6.4 J	< 1.0 U	**520**	< 1.0 U	< 1.0 U	**510**	< 1.0 U	< 25 U
	9/7/2012	< 50 U	< 50 U	< 50 U	< 50 U	16 J	< 50 U	**800**	< 50 U	< 50 U	**710**	< 50 U	< 1.0 U
	9/27/2013	1.0	< 1.0 U	< 1.0 U	< 1.0 U	11	< 1.0 U	**1000**	< 1.0 U	0.56 J	**1100**	< 1.0 U	< 2.0 U
	10/10/2014	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	6.7 J	< 1.0 U	**420**	< 1.0 U	< 1.0 U	**110**	< 1.0 U	< 27 U
	12/8/2015	0.48 J	< 1.0 U	< 1.0 U	< 1.0 U	2.4	< 1.0 U	**270**	< 1.0 U	0.34 J	**97**	< 1.0 U	< 2.0 U
	8/23/2016	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	2.6	< 2.0 U	**280**	< 2.0 U	< 2.0 U	**170**	< 2.0 U	< 4.0 U
GM-60	9/15/2006	< 25 U	< 25 U	< 25 U	< 25 U	**220**	< 25 U	**510**	< 25 U	< 25 U	**570**	< 25 U	< 50 U
	10/3/2008	< 25 U	< 25 U	< 25 U	< 25 U	**360**	< 25 U	**900**	< 25 U	< 25 U	**920**	< 25 U	< 50 U
	11/17/2009	< 20 U	< 20 U	< 20 U	< 20 U	**160**	< 20 U	**1100 J**	< 20 U	< 20 U	**1400**	< 20 U	< 4.0 U
	4/8/2010	< 22 U	< 22 U	< 22 U	< 22 U	17 J	< 22 U	**820**	< 22 U	< 22 U	**740**	< 22 U	< 4.0 U
	9/29/2010	< 4.0 U	< 4.0 U	< 4.0 U	< 4.0 U	**940**	< 4.0 U	**970**	< 4.0 U	10 J	**1300**	**18 J**	< 8.0 U
	9/30/2011	< 20 U	< 20 U	< 20 U	< 20 U	**370**	< 20 U	**620**	< 20 U	3.8 J	**810**	**11 J**	< 4.0 U
	9/7/2012	< 59 U	< 59 U	< 59 U	< 59 U	**480**	< 59 U	**610**	< 59 U	< 59 U	**980**	< 59 U	< 1.0 U
	9/27/2013	1.4	1.3	1.5	< 1.0 U	**400**	< 1.0 U	**670**	< 1.0 U	4.2	**1100**	**2.1**	< 2.0 U
	10/9/2014	< 67 U	< 67 U	< 67 U	< 67 U	**96**	< 67 U	**860**	< 67 U	< 67 U	**1400**	< 67 U	< 1.0 U
	11/5/2015	< 4.0 U	< 4.0 U	< 4.0 U	< 4.0 U	16	< 4.0 U	**770**	< 4.0 U	< 4.0 U	**910**	< 4.0 U	< 8.0 U
	8/23/2016	1.1 J	0.69 J	< 2.0 U	< 2.0 U	12	< 2.0 U	**530**	< 2.0 U	< 2.0 U	**700**	< 2.0 U	< 4.0 U

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Moraine, Ohio

Well	Date	VOCs (ug/L)											
		1,1,1-TCA	1,1-DCA	1,1-DCE	Benzene	cis-1,2-DCE	Ethyl-benzene	PCE	Toluene	trans-1,2-DCE	TCE	Vinyl Chloride	Xylenes (total)
MCL		200		7	5	70	700	5	1000	100	5	2	10,000
GM-66	5/2/2007	< 2.9 U	8.3	< 2.9 U	< 2.9 U	**84**	< 2.9 U	< 2.9 U	< 2.9 U	3.3	**31**	**4.1**	< 5.7 U
	10/8/2014	< 1.0 U	12	< 1.0 U	< 1.0 U	**280**	< 1.0 U	< 1.0 U	< 1.0 U	11	**110**	**3.0 J**	< 20 U
	12/8/2015	< 1.0 U	12	2.5	< 1.0 U	**280**	< 1.0 U	< 1.0 U	< 1.0 U	11	**110**	**3.0**	< 2.0 U
GM-67S	5/3/2007	< 5.7 U	2.8 J	< 5.7 U	< 5.7 U	5.2 J	< 5.7 U	1.1 J	< 5.7 U	< 5.7 U	**140**	< 5.7 U	< 1.0 U
	10/10/2014	< 5.0 U	1.6 J	< 5.0 U	< 5.0 U	2.3 J	< 5.0 U	1.1 J	< 5.0 U	< 5.0 U	**140**	< 5.0 U	< 1.0 U
	11/4/2015	< 1.0 U	2.1	< 1.0 U	< 1.0 U	2.3	< 1.0 U	1.6	< 1.0 U	0.34 J	**130**	< 1.0 U	< 2.0 UJ
GM-68S	5/4/2007	0.62 J	< 2.5 U	< 2.5 U	< 2.5 U	< 2.5 U	< 2.5 U	**28**	< 2.5 U	< 2.5 U	**78**	< 2.5 U	< 5.0 U
GM-71	5/3/2007	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	**62**	< 2.0 U	< 2.0 U	**11**	< 2.0 U	< 4.0 U
	10/9/2014	0.31 J	< 1.0 U	< 1.0 U	< 1.0 U	0.21 J	< 1.0 U	**19**	< 1.0 U	< 1.0 U	**12**	< 1.0 U	< 2.0 U
	11/3/2015	0.51 J	0.35 J	< 1.0 U	< 1.0 U	0.46 J	< 1.0 U	**19**	< 1.0 U	< 1.0 U	**20**	< 1.0 U	< 2.0 U
GM-72	5/3/2007	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	**53**	< 1.0 U	< 1.0 U	0.66 J	< 1.0 U	< 3.3 U
	10/9/2014	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	2.1	< 1.0 U	< 1.0 U	< 1.0 UB	< 1.0 U	< 2.0 U
	11/3/2015	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	2.2	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 2.0 U
GM-74S	9/27/2007	< 4.0 U	< 4.0 U	< 4.0 U	< 4.0 U	< 4.0 U	< 4.0 U	**140**	< 4.0 U	< 4.0 U	**83**	< 4.0 U	< 8.0 U
	4/9/2010	< 5.7 U	< 5.7 U	< 5.7 U	< 5.7 U	< 5.7 U	< 5.7 U	**200**	< 5.7 U	< 5.7 U	**44**	< 5.7 U	< 1.0 U
	8/23/2016	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	**69**	< 2.0 U	< 2.0 U	**14 K**	< 2.0 U	< 4.0 U
GM-75S	9/26/2007	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	**490**	< 1.0 U	< 1.0 U	**210**	< 1.0 U	< 29 U
	10/6/2008	< 20 U	< 20 U	< 20 U	< 20 U	< 20 U	< 20 U	**690**	< 20 U	< 20 U	**250**	< 20 U	< 4.0 U
	11/16/2009	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	4.9 J	< 1.0 U	**640**	< 1.0 U	< 1.0 U	**260**	< 1.0 U	< 20 U
	9/29/2010	< 29 U	< 29 U	< 29 U	< 29 U	14 J	< 29 U	**650**	< 29 U	< 29 U	**890**	< 29 U	< 57 U
	9/30/2011	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	4.4 J	< 1.0 U	**430**	< 1.0 U	< 1.0 U	**720**	< 1.0 U	< 33 U
	9/7/2012	< 29 U	< 29 U	< 29 U	< 29 U	< 29 U	< 29 U	**420**	< 29 U	< 29 U	**250**	< 29 U	< 57 U
	9/27/2013	1.8	0.53 J	< 1.0 U	< 1.0 U	4.5	< 1.0 U	**480**	< 1.0 U	0.29 J	**350**	< 1.0 U	< 2.0 U
	10/9/2014	< 20 U	< 20 U	< 20 U	< 20 U	< 20 U	< 20 U	**460**	< 20 U	< 20 U	**170**	< 20 U	< 4.0 U
	12/11/2015	0.58 J	< 1.3 U	< 1.3 U	< 1.3 U	< 1.3 U	< 1.3 U	**420**	< 1.3 U	< 1.3 U	**68**	< 1.3 U	< 2.5 U
	8/24/2016	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	**520**	< 2.0 U	< 2.0 U	**68**	< 2.0 U	< 4.0 U
GM-76S	9/23/2007	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	1.2	< 1.0 U	< 1.0 U	1.6	< 1.0 U	< 2.0 U
	10/9/2014	< 1.0 U	< 1.0 U	< 1.0 U	0.39 J	< 1.0 U	< 1.0 U	1.5	< 1.0 U	< 1.0 U	1.1	< 1.0 U	< 2.0 U
	10/30/2015	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	1.1	< 1.0 U	< 1.0 U	0.64 J	< 1.0 U	< 2.0 U
GM-83S	2/26/2008	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	2.9	< 1.0 U	< 1.0 U	0.18 J	0.3 J	< 1.0 U	< 1.0 U	< 2.0 U
	9/7/2012	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	1.1	< 1.0 U	< 1.0 U	0.45 J	< 1.0 U	0.19 J	< 1.0 U	< 2.0 U
	9/26/2013	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	1.1	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 2.0 U

Table D-1
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RACER Trust Moraine Facilities
Moraine, Ohio

Well	Date	VOCs (ug/L)											
		1,1,1-TCA	1,1-DCA	1,1-DCE	Benzene	cis-1,2-DCE	Ethyl-benzene	PCE	Toluene	trans-1,2-DCE	TCE	Vinyl Chloride	Xylenes (total)
MCL		200		7	5	70	700	5	1000	100	5	2	10,000
HR-1	9/16/1999	1.6	2.4	< 1.0 U	< 1.0 U	5.8	< 1.0 U	**44**	< 1.0 U	3.9	**56**	< 1.0 U	< 1.0 U
	9/25/2000	1.3	2.4	< 1.0 U	< 1.0 U	8.5	< 1.0 U	**33**	< 1.0 U	3.2	**56**	< 1.0 U	< 1.0 U
	11/8/2001	2.2 J	2.8 J	< 3.3 U	< 3.3 U	9.9	< 3.3 U	**36**	< 3.3 U	2.8	**86 B**	< 3.3 U	< 3.3 U
	9/23/2002	< 2.0 U	2.8	< 2.0 U	< 2.0 U	4.5	< 2.0 U	**33**	< 2.0 U	3.2	**33**	< 2.0 U	< 2.0 U
	9/18/2003	1 J	2.6	< 2.0 U	< 2.0 U	2.3	< 2.0 U	**27**	< 2.0 U	3.2	**56**	< 2.0 U	< 2.0 U
	9/13/2004	0.56 J	2.5	< 1.0 U	< 1.0 U	24	< 1.0 U	**23**	< 1.0 U	2.3	**30**	0.55 J	< 1.0 U
	10/18/2005	1.2	2.7	< 1.0 U	< 1.0 U	19	< 1.0 U	**28**	< 1.0 U	2.3	**43**	1.1	< 2.0 U
	9/25/2006	0.57 J	1.7	< 1.0 U	< 1.0 U	14	< 1.0 U	< 1.0 U	< 1.0 U	1.4 J	**50**	< 1.0 U	< 3.3 U
	9/24/2007	0.45 J	2.2	0.21J	< 1.0 U	9.5	< 1.0 U	**20**	< 1.0 U	1.9	**40**	< 1.0 U	< 2.0 U
	9/29/2008	0.77 J	1.8 J	< 2.5 U	< 2.5 U	5	< 2.5 U	**27**	< 2.5 U	2 J	**70**	< 2.5 U	< 5.0 U
	9/26/2013	0.99 J	1.2	< 1.0 U	< 1.0 U	3.1	< 1.0 U	**30**	< 1.0 U	0.90 J	**100**	< 1.0 U	< 2.0 U
	10/8/2014	1.3 J	1.4 J	< 5.0 U	< 5.0 U	20	< 5.0 U	**36**	< 5.0 U	1.5 J	**120**	< 5.0 U	< 1.0 U
	11/5/2015	1.2	0.51 J	< 1.0 U	< 1.0 U	6.6	< 1.0 U	**76**	< 1.0 U	0.43 J	**210**	< 1.0 U	< 2.0 U
	8/23/2016	1.1 J	< 2.0 U	< 2.0 U	< 2.0 U	3.3	< 2.0 U	**63**	< 2.0 U	< 2.0 U	**190**	< 2.0 U	< 4.0 U
	8/17/2017	1.0	0.39 J	< 1.0 U	< 1.0 U	0.32 J	< 1.0 U	**56**	< 1.0 U	< 1.0 U	0.65 J	< 1.0 U	< 2.0 U
	7/25/2018	0.77 J	0.96 J	< 1.0 U	< 1.0 U	20	< 1.0 U	**99**	< 1.0 U	1.3	**40**	< 1.0 U	< 2.0 U
HR-2	9/16/1999	< 1.0 U	3.9	< 1.0 U	< 1.0 U	9.6	< 1.0 U	< 1.0 U	< 1.0 U	1.5	< 1.0 U	< 1.0 U	< 1.0 U
	9/19/2000	< 1.0 U	4.6	< 1.0 U	< 1.0 U	8.6	< 1.0 U	< 1.0 U	< 1.0 U	1.1	< 1.0 U	< 1.0 U	< 1.0 U
	11/7/2001	< 1.0 U	4.2	< 1.0 U	< 1.0 U	8.3	< 1.0 U	< 1.0 U	< 1.0 U	1.1	0.56 J	< 1.0 U	< 1.0 U
	9/24/2002	< 1.0 U	4.9	< 1.0 U	< 1.0 U	8.8	< 1.0 U	< 1.0 U	< 1.0 U	1.2	0.46 J	< 1.0 U	< 1.0 U
	9/16/2003	< 1.0 U	4.5	< 1.0 U	< 1.0 U	7.2	< 1.0 U	< 1.0 U	< 1.0 U	0.96	0.40 J	< 1.0 U	< 1.0 U
	9/16/2004	< 1.0 U	5.6	< 1.0 U	< 1.0 U	7.8	< 1.0 U	0.37 J	< 1.0 U	1.1	0.53 J	0.23 J	< 1.0 U
	10/20/2005	< 1.0 U	4.4	< 1.0 U	< 1.0 U	5.0	< 1.0 U	< 1.0 U	< 1.0 U	0.78 J	0.35 J	0.29 J	< 2.0 U
	9/25/2006	< 1.0 U	5.2	< 1.0 U	< 1.0 U	5.6	< 1.0 U	< 1.0 U	< 1.0 U	0.79 J	0.48 J	< 1.0 U	< 2.0 U
	9/26/2007	< 1.0 U	5.3	< 1.0 U	< 1.0 U	5.0	< 1.0 U	< 1.0 U	< 1.0 U	0.76 J	0.45 J	< 1.0 U	< 2.0 U
	10/1/2008	< 1.0 U	4.6	< 1.0 U	< 1.0 U	3.4	< 1.0 U	< 1.0 U	< 1.0 U	0.47 J	0.36 J	< 1.0 U	< 2.0 U
	11/13/2009	< 1.0 U	5.6	< 1.0 U	< 1.0 U	3.7	< 1.0 U	< 1.0 U	< 1.0 U	0.58 J	0.45 J	< 1.0 U	< 2.0 U
	9/28/2010	< 1.0 U	5.6	< 1.0 U	< 1.0 U	2.8	< 1.0 U	< 1.0 U	< 1.0 U	0.41 J	0.39 J	< 1.0 U	< 1.0 U
	9/28/2011	< 1.0 U	6.4	< 1.0 U	< 1.0 U	2.1	< 1.0 U	< 1.0 U	< 1.0 U	0.32 J	0.43 J	< 1.0 U	< 2.0 U
	9/7/2012	< 1.0 U	7.7	< 1.0 U	< 1.0 U	1.8	< 1.0 U	< 1.0 U	< 1.0 U	0.28 J	0.41 J	< 1.0 U	< 2.0 U
	9/27/2013	< 1.0 U	7.5	< 1.0 U	< 1.0 U	1.6	< 1.0 U	< 1.0 U	< 1.0 U	0.28 J	0.40 J	< 1.0 U	< 2.0 U
	10/8/2014	< 1.0 U	7.3	< 1.0 U	< 1.0 U	1.8	< 1.0 U	< 1.0 U	< 1.0 U	0.29 J	< 1.0 UB	< 1.0 U	< 2.0 U
	10/30/2015	< 1.0 U	8.3	< 1.0 U	< 1.0 U	2.1	< 1.0 U	< 1.0 U	< 1.0 U	0.30 J	< 1.0 U	< 1.0 U	< 2.0 U
	8/25/2016	< 1.0 U	9.5	< 1.0 U	< 1.0 U	2.9	< 1.0 U	< 1.0 U	< 1.0 U	0.39 J	< 1.0 UB	< 1.0 U	< 2.0 U

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RACER Trust Moraine Facilities
Moraine, Ohio

Well	Date	VOCs (ug/L)											
		1,1,1-TCA	1,1-DCA	1,1-DCE	Benzene	cis-1,2-DCE	Ethyl-benzene	PCE	Toluene	trans-1,2-DCE	TCE	Vinyl Chloride	Xylenes (total)
MCL		200		7	5	70	700	5	1000	100	5	2	10,000
HR-3	9/16/1999	< 1.0 U	6.2	< 1.0 U	< 1.0 U	6.1	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
	9/19/2000	< 1.0 U	5.1	< 1.0 U	< 1.0 U	4.6	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
	11/7/2001	< 1.0 U	6.9	< 1.0 U	< 1.0 U	5.1	< 1.0 U	< 1.0 U	< 1.0 U	0.60	0.66 J	< 1.0 U	< 1.0 U
	9/24/2002	< 1.0 U	15	< 1.0 U	< 1.0 U	9.9	< 1.0 U	< 1.0 U	< 1.0 U	1.0	1.4	< 1.0 U	< 1.0 U
	9/16/2003	< 1.0 U	13	< 1.0 U	< 1.0 U	9.9	< 1.0 U	< 1.0 U	< 1.0 U	1.1	1.6	< 1.0 U	< 1.0 U
	9/16/2004	0.27 J	23	< 1.0 U	< 1.0 U	18	< 1.0 U	0.32 J	< 1.0 U	1.8	**8.1**	< 1.0 U	< 1.0 U
	10/20/2005	0.34 J	18	< 1.0 U	< 1.0 U	11	< 1.0 U	< 1.0 U	< 1.0 U	1.5	**10**	< 1.0 U	< 2.0 U
	9/25/2006	< 1.0 U	10	< 1.0 U	< 1.0 U	8.2	< 1.0 U	< 1.0 U	< 1.0 U	0.99 J	**7.2**	< 1.0 U	< 2.0 U
	10/2/2008	0.84 J	16	0.27 J	< 1.0 UJ	17	< 1.0 U	< 1.0 U	< 1.0 U	1.6	**32**	**2.2**	< 2.0 U
	9/27/2013	6.9	12	0.51 J	< 1.0 U	59	< 1.0 U	< 1.0 U	< 1.0 U	2.2	**190**	0.93 J	< 2.0 U
	10/8/2014	7.6 J	11	< 1.0 U	< 1.0 U	**82**	< 1.0 U	< 1.0 U	< 1.0 U	2.7 J	**220**	**6.4 J**	< 2.0 U
	11/4/2015	7.3	9.6	0.68 J	< 1.0 U	**82**	< 1.0 U	< 1.0 U	< 1.0 U	2.6	**200**	**13**	< 2.0 U
	8/25/2016	7.1	6.6	< 2.0 U	< 2.0 U	**93**	< 2.0 U	0.95 J	< 2.0 U	2.5	**200**	**4.2**	< 4.0 U
HR-4	9/14/1999	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	1.2	< 1.0 U	< 1.0 U	1.4	< 1.0 U	< 1.0 U
	9/20/2000	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
	11/6/2001	0.17 J	< 1.0 U	< 1.0 U	< 1.0 U	0.28 J	< 1.0 U	0.88 J	< 1.0 U	< 0.50 U	1.0	< 1.0 U	< 1.0 U
	9/27/2002	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 0.50 U	< 1.0 U	0.59 J	< 1.0 U	< 0.50 U	0.71 J	< 1.0 U	< 1.0 U
	9/18/2003	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 0.50 U	< 1.0 U	0.55 J	< 1.0 U	< 0.50 U	0.71 J	< 1.0 U	< 1.0 U
	9/16/2004	< 1.0 U	0.77 J	< 1.0 U	< 1.0 U	< 0.50 U	< 1.0 U	1.3	< 1.0 U	< 0.50 U	0.50 J	< 1.0 U	< 1.0 U
	10/20/2005	< 1.0 U	1.5	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	0.39 J	< 1.0 U	< 1.0 U	0.32 J	< 1.0 U	< 2.0 U
	9/25/2006	< 1.0 U	1.6	< 1.0 U	< 1.0 U	0.26 J	< 1.0 U	0.41 J	< 1.0 U	< 1.0 U	0.34 J	< 1.0 U	< 2.0 U
	9/26/2007	< 1.0 U	3.6	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	0.33 J	< 1.0 U	< 1.0 U	0.31 J	< 1.0 U	< 2.0 U
	9/30/2008	< 1.0 U	4.1	< 1.0 U	< 1.0 U	0.23 J	< 1.0 U	0.44 J	< 1.0 U	< 1.0 U	0.31 J	< 1.0 U	< 2.0 U
	11/13/2009	< 1.0 U	5.5	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	0.37 J	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 2.0 U
	9/28/2010	< 1.0 U	3.9	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	0.34 J	< 1.0 U	< 1.0 U	0.28 J	< 1.0 U	< 2.0 U
	9/28/2011	< 1.0 U	4.5	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	0.27 J	< 1.0 U	< 2.0 U
	9/7/2012	0.23 J	5	< 1.0 U	< 1.0 U	0.35 J	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	0.32 J	< 1.0 U	< 2.0 U
	9/27/2013	0.29 J	3.0	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	0.21 J	< 1.0 U	< 1.0 U	0.27 J	< 1.0 U	< 2.0 U
	10/7/2014	0.71 J	2.0	< 1.0 U	< 1.0 U	0.26 J	< 1.0 U	0.28 J	< 1.0 U	< 1.0 U	< 1.0 UB	< 1.0 U	< 2.0 U
	10/30/2015	1.2	1.6	< 1.0 U	< 1.0 U	0.32 J	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	0.33 J	< 1.0 U	< 2.0 U
	8/19/2016	2	1.6	< 1.0 U	< 1.0 U	0.42 J	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	0.36 J	< 1.0 U	< 2.0 U
	8/16/2017	1.9	2.1	< 1.0 U	< 1.0 U	0.45 J	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 2.0 U
	7/24/2018	1.6	1.6	< 1.0 U	< 1.0 U	0.45 J	< 1.0 U	0.16 J	< 1.0 U	< 1.0 U	0.29 J	< 1.0 U	< 2.0 U
	7/9/2019	2.2	1.7	0.19 J	< 1.0 U	0.56 J	< 1.0 U	0.22 J	< 1.0 U	< 1.0 U	0.29 J	< 1.0 U	< 2.0 U

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Well	Date	VOCs (ug/L)											
		1,1,1-TCA	1,1-DCA	1,1-DCE	Benzene	cis-1,2-DCE	Ethyl-benzene	PCE	Toluene	trans-1,2-DCE	TCE	Vinyl Chloride	Xylenes (total)
MCL		200		7	5	70	700	5	1000	100	5	2	10,000
HR-5	9/16/1999	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	10.5	< 1.0 U	< 1.0 U	< 1.0 U	1.1	**12**	< 1.0 U	< 1.0 U
	9/19/2000	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	5.6	< 1.0 U	< 1.0 U	3.0	< 1.0 U	**8.1**	< 1.0 U	2.0
	11/7/2001	0.17 J	0.55 J	< 1.0 U	< 1.0 U	7.8	< 1.0 U	< 1.0 U	< 1.0 U	0.74	**11**	< 1.0 U	< 1.0 U
	9/23/2002	< 1.0 U	0.55 J	< 1.0 U	< 1.0 U	7.5	< 1.0 U	< 1.0 U	< 1.0 U	0.58	**13**	< 1.0 U	< 1.0 U
	9/18/2003	< 1.0 U	0.42 J	< 1.0 U	< 1.0 U	5.0	< 1.0 U	< 1.0 U	< 1.0 U	0.46 J	**11**	< 1.0 U	< 1.0 U
	9/13/2004	< 1.0 U	0.43 J	< 1.0 U	< 1.0 U	4.8	< 1.0 U	< 1.0 U	< 1.0 U	0.44 J	**11**	< 1.0 U	< 1.0 U
	10/18/2005	< 1.0 U	0.54 J	< 1.0 U	< 1.0 U	4.6	< 1.0 U	< 1.0 U	< 1.0 U	0.52 J	**13**	1.1	< 2.0 U
	9/22/2006	< 1.0 UJ	0.41 J	< 1.0 UJ	< 1.0 UJ	5.2 J	< 1.0 UJ	0.27 J	< 1.0 UJ	0.46 J	**13 J**	0.22 J	< 2.0 UJ
	9/24/2007	< 1.0 U	0.51J	< 1.0 U	< 1.0 U	5.4	< 1.0 U	< 1.0 U	< 1.0 U	0.41J	**13**	< 1.0 U	< 2.0 U
	9/29/2008	< 1.0 U	0.48 J	< 1.0 U	< 1.0 U	5.4	< 1.0 U	< 1.0 U	< 1.0 U	0.59 J	**13**	< 1.0 U	< 2.0 U
	9/26/2013	< 1.0 U	0.70 J	< 1.0 U	< 1.0 U	7.0	< 1.0 U	0.57 J	< 1.0 U	0.63 J	**14**	0.36 J	< 2.0 U
HR-6	9/16/1999	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	2.0	< 1.0 U	< 1.0 U
	9/23/2002	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 0.50 U	< 1.0 U	< 1.0 U	< 1.0 U	< 0.50 U	1.5	< 1.0 U	< 1.0 U
HR-7	9/17/1999	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	**9.8**	< 1.0 U	< 1.0 U
	9/19/2002	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	0.65	< 1.0 U	< 1.0 U	< 1.0 U	< 0.50 U	**9.4**	< 1.0 U	< 1.0 U
	9/19/2002	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	0.65	< 1.0 U	< 1.0 U	< 1.0 U	< 0.50 U	**9.4**	< 1.0 U	< 1.0 U
	2/26/2008	< 1.0 U	0.26 J	< 1.0 U	< 1.0 U	0.94 J	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	**7.3**	< 1.0 U	< 2.0 U
	9/23/2010	< 1.0 U	0.26 J	< 1.0 U	< 1.0 U	1.4	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	**7.5**	< 1.0 U	< 2.0 U
	9/28/2011	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	1.7	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	**7.3**	< 1.0 U	< 2.0 U
	9/6/2012	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	1.6	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	**7.0**	< 1.0 U	< 2.0 U
	9/26/2013	< 1.0 U	0.35 J	< 1.0 U	< 1.0 U	1.9	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	**6.2**	< 1.0 U	< 2.0 U
	10/7/2014	< 1.0 U	0.27 J	< 1.0 U	< 1.0 U	1.7	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	**6.2**	< 1.0 U	< 2.0 U
	11/5/2015	< 1.0 U	< 1.0 U	< 1.0 UF2J	< 1.0 U	1.4	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	**6.9**	< 1.0 U	< 2.0 U
	8/15/2016	< 1.0 U	0.34 J	< 1.0 U	< 1.0 U	1.9	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	**7.0**	< 1.0 U	< 2.0 U
HR-16	9/23/1999	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	2.7	< 1.0 U	< 1.0 U
	9/18/2002	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	0.46J	< 1.0 U	< 1.0 U	< 1.0 U	< 0.50 U	1.5	< 1.0 U	< 1.0 U
	1/21/2008	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	1.3	< 1.0 U	< 2.0 U
	9/6/2012	0.62 J	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	1.4	< 1.0 U	< 2.0 U
	9/25/2013	0.61 J	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	0.14 J	< 1.0 U	< 1.0 U	1.3	< 1.0 U	< 2.0 U
	10/7/2014	0.58 J	0.64 J	< 1.0 U	< 1.0 U	0.44 J	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	1.9	< 1.0 U	< 2.0 U
	11/5/2015	< 1.0 U	1.3	< 1.0 U	< 1.0 U	1.0	< 1.0 U	< 1.0 U	< 1.0 U	0.63 J	2.7	< 1.0 U	< 2.0 U
	8/22/2016	< 1.0 U	1.5	< 1.0 U	< 1.0 U	1.0	< 1.0 U	< 1.0 U	< 1.0 U	0.67 J	3.6	< 1.0 U	< 2.0 U
	7/9/2019	0.36 J	0.75 J	< 1.0 U	< 1.0 U	0.62 J	< 1.0 U	0.17 J	< 1.0 U	0.21 J	2.9	< 1.0 U	< 2.0 U

Table D-1
Groundwater VOC Analytical Results for the Upper Aquifer Wells from 1999 to 2019
RACER Trust Moraine Facilities
Moraine, Ohio

Well	Date	VOCs (ug/L)											
		1,1,1-TCA	1,1-DCA	1,1-DCE	Benzene	cis-1,2-DCE	Ethyl-benzene	PCE	Toluene	trans-1,2-DCE	TCE	Vinyl Chloride	Xylenes (total)
MCL		200		7	5	70	700	5	1000	100	5	2	10,000
HR-17	9/23/1999	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	6.2	< 1.0 U	**16**	< 1.0 U	< 1.0 U	**7.4**	< 1.0 U	< 1.0 U
	9/28/2000	1.9	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	3.7	< 1.0 U	< 1.0 U	4.4	< 1.0 U	< 1.0 U
	11/8/2001	1.4	< 1.0 U	< 1.0 U	< 1.0 U	< 0.50 U	< 1.0 U	3.3	< 1.0 U	< 0.50 U	4.2 B	< 1.0 U	< 1.0 U
	9/18/2002	0.39 J	1.5	< 1.0 U	< 1.0 U	5.1	< 1.0 U	**22**	< 1.0 U	1.4	**12**	< 1.0 U	< 1.0 U
	9/25/2003	< 2.0 U	0.75 J	< 2.0 U	< 2.0 U	2.2	< 2.0 U	**64**	< 2.0 U	0.7 J	**10**	< 2.0 U	< 2.0 U
	9/17/2004	< 5.0 U	2.0 J	< 5.0 U	< 5.0 U	7.1	< 5.0 U	**82**	< 5.0 U	1.6 J	**18**	< 5.0 U	< 5.0 U
	10/19/2005	< 1.0 U	0.70 J	< 1.0 U	< 1.0 U	3.1	< 1.0 U	**45**	< 1.0 U	0.57 J	**8.3**	< 1.0 U	< 3.7 U
	9/18/2006	< 1.0 U	0.6 J	< 1.0 U	< 1.0 U	4.6	< 1.0 U	**34**	< 1.0 U	0.46 J	**5.6**	< 1.0 U	< 2.0 U
	9/25/2007	< 2.5 U	1.2 J	< 2.5 U	< 2.5 U	1.9 J	< 2.5 U	**51**	< 2.5 U	0.69 J	**16**	< 2.5 U	< 5.0 U
	9/26/2008	< 4.0 U	1.1 J	< 4.0 U	< 4.0 U	2.7 J	< 4.0 U	**120**	< 4.0 U	1.0 J	**31**	< 4.0 U	< 8.0 U
	11/12/2009	< 2.5 U	1.7 J	< 2.5 U	< 2.5 U	1.9 J	< 2.5 U	**85**	< 2.5 U	1.3 J	**21**	< 2.5 U	< 5.0 U
	9/23/2010	< 1.0 U	1.9	< 1.0 U	< 1.0 U	2.2	< 1.0 U	**60**	< 1.0 U	1.2 J	**18**	< 1.0 U	< 3.3 U
	9/29/2011	< 5.7 U	< 5.7 U	< 5.7 U	< 5.7 U	< 5.7 U	< 5.7 U	**110**	< 5.7 U	< 5.7 U	**57**	< 5.7 U	< 1.0 U
	9/6/2012	< 9.1 U	< 9.1 U	< 9.1 U	< 9.1 U	2.4 J	< 9.1 U	**140**	< 9.1 U	< 9.1 U	**75**	< 9.1 U	< 1.0 U
	9/25/2013	1.3	0.93 J	< 1.0 U	< 1.0 U	1.4	< 1.0 U	**150**	< 1.0 U	0.92 J	**100**	< 1.0 U	< 2.0 U
	10/7/2014	< 5.0 U	2.0 J	< 5.0 U	< 5.0 U	2.2 J	< 5.0 U	**170**	< 5.0 U	< 5.0 U	**160**	< 5.0 U	< 1.0 U
	11/4/2015	1.5	0.61 J	< 1.0 U	< 1.0 U	1.7	< 1.0 U	**150**	< 1.0 U	0.73 J	**160**	< 1.0 U	< 2.0 U
	8/25/2016	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	**170**	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 4.0 U
	8/17/2017	0.80 J	0.60 J	< 1.0 U	< 1.0 U	2.3	< 1.0 U	**150**	< 1.0 U	< 1.0 U	**24**	< 1.0 U	< 2.0 U
	7/25/2018	4.8	2.2	< 1.0 U	< 1.0 U	1.1	< 1.0 U	**180**	< 1.0 U	< 1.0 U	0.92 J	< 1.0 U	< 2.0 U
	7/9/2019	7.4	1.6	0.54 J	< 1.0 U	1.2	< 1.0 U	**150**	< 1.0 U	< 1.0 U	1.7	< 1.0 U	< 2.0 U
ME-1	8/31/1999	14	2.4	< 1.0 U	< 1.0 U	38	< 1.0 U	**84**	< 1.0 U	1.5	**292**	**36**	< 1.0 U
ME-3	8/31/1999	43	6.1	< 1.0 U	< 1.0 U	5.7	< 1.0 U	**58**	< 1.0 U	< 1.0 U	**48**	< 1.0 U	< 1.0 U
	9/21/2000	6.4	3.4	< 1.0 U	< 1.0 U	2.9	< 1.0 U	< 1.0 U	1.4	2.9	< 1.0 U	**2.1**	< 1.0 U
	11/15/2001	1.6	5.9	< 1.0 U	< 1.0 U	16	< 1.0 U	1.3	0.34 J	2.7	3.8	**7.3**	< 1.0 U
	9/24/2002	< 2.5 U	< 2.5 U	< 2.5 U	< 2.5 U	< 1.0 U	< 2.5 U	< 2.5 U	< 2.5 U	< 1.0 U	< 2.5 U	< 2.5 U	< 2.5 U
	10/1/2003	0.31 J	24	< 1.0 U	0.6 J	0.96	< 1.0 U	< 1.0 U	< 1.0 U	< 0.50 U	1.5	< 1.0 U	< 1.0 U
	9/15/2004	0.53 J	18	< 1.0 U	< 1.0 U	2.2	< 1.0 U	0.21 J	< 1.0 U	< 0.50 U	1.5	1.1	< 1.0 U
	10/18/2005	1.6	15	< 1.0 U	< 1.0 U	1.1	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	1.9	1.6	< 2.0 U
	9/27/2006	1.1	8.5	< 1.0 U	< 1.0 U	3.5	< 1.0 U	1.9	< 1.0 U	0.34 J	2.4	**2.2**	< 2.0 U
	9/20/2007	2.0	3.8	< 1.0 U	< 1.0 U	1.2	< 1.0 U	**5.2**	< 1.0 U	< 1.0 U	3.6	0.82 J	< 2.0 U
	10/22/2008	2.1	1.8	< 1.0 U	< 1.0 U	1.4	< 1.0 U	**8.1**	< 1.0 U	< 1.0 U	4.9	0.7 J	< 2.0 U
	9/27/2013	1.0	0.41 J	< 1.0 U	< 1.0 U	0.35 J	< 1.0 U	**7.1**	< 1.0 U	< 1.0 U	4.6	< 1.0 U	< 2.0 U

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RACER Trust Moraine Facilities
Moraine, Ohio

Well	Date	VOCs (ug/L)											
		1,1,1-TCA	1,1-DCA	1,1-DCE	Benzene	cis-1,2-DCE	Ethyl-benzene	PCE	Toluene	trans-1,2-DCE	TCE	Vinyl Chloride	Xylenes (total)
MCL		200		7	5	70	700	5	1000	100	5	2	10,000
ME-6	8/31/1999	2.9	< 1.0 U	< 1.0 U	< 1.0 U	**255**	< 1.0 U	**213**	< 1.0 U	< 1.0 U	**474**	< 1.0 U	< 1.0 U
	9/21/2000	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	**99**	< 1.0 U	**6.7**	1.9	2.5	**19**	**6.1**	< 1.0 U
	11/15/2001	2.2	2.7	< 2.0 U	< 2.0 U	65	< 2.0 U	**8.2**	0.42 J	1.8	**23**	**13**	< 2.0 U
	9/25/2002	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	5.2	< 1.0 U	< 1.0 U	6.6J	< 5.0 U	< 1.0 U	< 1.0 U	< 1.0 U
	10/1/2003	13	7.2	< 2.0 U	0.46 J	20	< 2.0 U	**12**	< 2.0 U	< 1.0 U	**31**	**2.9**	< 2.0 U
	9/15/2004	4.1	6.3	0.26 J	< 1.0 U	14	< 1.0 U	**5.3**	< 1.0 U	0.56	**9.2**	**2.4**	< 1.0 U
	10/18/2005	2.2	7.0	< 1.0 U	< 1.0 U	13	< 1.0 U	**9.8**	< 1.0 U	0.93 J	**25**	**5.6**	< 2.0 U
	9/27/2006	1.4	6.3	< 1.0 U	< 1.0 U	27	< 1.0 U	**13**	< 1.0 U	1.3 J	**32**	**11**	< 2.9 U
	9/20/2007	0.61 J	6.4	< 1.0 U	< 1.0 U	9.2	< 1.0 U	4.5	< 1.0 U	0.51 J	**12**	**4.5**	< 2.0 U
	10/22/2008	2.7	11	< 1.0 U	< 1.0 U	5.2	< 1.0 U	**7.7**	< 1.0 U	0.25 J	**9**	1.7	< 2.0 U
	9/27/2013	5.9	20	< 1.0 U	< 1.0 U	1.5	< 1.0 U	**5.1**	< 1.0 U	< 1.0 U	2.8	0.28 J	< 2.0 U
RMW-89	1/15/2016	0.99 J	< 1.0 U	< 1.0 U	< 1.0 U	2.0	< 1.0 U	**46**	< 1.0 U	< 1.0 U	**22**	< 1.0 U	< 2.0 U
	8/24/2016	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	4.4	< 2.0 U	**61**	< 2.0 U	< 2.0 U	**21**	< 2.0 U	< 4.0 U
RMW-90	1/15/2016	7.1	8.7	0.49 J	< 1.0 U	38	< 1.0 U	0.86 J	< 1.0 U	1.0	**29**	1.0	< 2.0 U
	8/17/2016	12	8.4	0.96 J	< 1.0 U	31	< 1.0 U	1.5	< 1.0 U	0.99 J	**55**	0.81 J	< 2.0 U
RMW-91	7/11/2019	1.8 J	2.5 J	< 5.0 U	< 5.0 U	25	< 5.0 U	**130**	< 5.0 U	2.3 J	**62**	< 5.0 U	< 10 U
RMW-92	7/11/2019	1.6	0.55 J	< 1.0 U	< 1.0 U	0.83 J	< 1.0 U	**57**	< 1.0 U	< 1.0 U	1.1	< 1.0 U	< 2.0 U
RMW-93	7/11/2019	2.0 J	0.66 J	< 2.5 U	< 2.5 U	1.7 J	< 2.5 U	**90**	< 2.5 U	< 2.5 U	**7.2**	< 2.5 U	< 5.0 U
RMW-94	7/11/2019	1.2 J	0.39 J	< 1.7 U	< 1.7 U	0.40 J	< 1.7 U	**58**	< 1.7 U	< 1.7 U	0.71 J	< 1.7 U	< 3.3 U
RZ-1A	9/29/1999	5.7	1.8	< 1.0 U	< 1.0 U	68.6	< 1.0 U	**252**	< 1.0 U	3.6	**158**	**3.3**	< 1.0 U
RZ-1G	9/29/1999	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	14.8	< 1.0 U	**91.5**	< 1.0 U	< 1.0 U	**44.1**	< 1.0 U	< 1.0 U
RZ-3E	9/30/1999	28.4	20.9	1.6	< 1.0 U	**112**	< 1.0 U	**58.2**	< 1.0 U	2.0	**124**	**2.7**	< 1.0 U
RZ-3L	9/30/1999	2.4	59.7	< 1.0 U	**8.2**	**96.6**	22.1	< 1.0 U	124	2.0	**18.2**	**14.1**	182.4
RZ-3PP	10/8/1999	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	2.0	1.3	< 1.0 U	**14.7**	< 1.0 U	< 1.0 U
RZ-3T	9/30/1999	7.2	4.9	< 1.0 U	< 1.0 U	23.8	< 1.0 U	**19.8**	< 1.0 U	< 1.0 U	**97.3**	< 1.0 U	< 1.0 U
RZ-3Z	9/29/1999	3.8	1.5	< 1.0 U	< 1.0 U	3.2	< 1.0 U	**20.6**	< 1.0 U	< 1.0 U	**33.9**	< 1.0 U	< 1.0 U
RZ-4B	8/3/2006	6.1	3.7 J	< 4.0 U	< 4.0 U	11	< 4.0 U	**89**	< 4.0 U	1.1 J	**93**	< 4.0 U	< 8.0 U
RZ-4O	8/3/2006	3.8 J	2.6 J	< 4.0 U	< 4.0 U	13	< 4.0 U	**110**	< 4.0 U	1.6 J	**82**	< 4.0 U	< 8.0 U
W-1-N	9/17/1999	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
	9/19/2002	< 1.0 U	0.36 J	< 1.0 U	< 1.0 U	< 0.50 U	< 1.0 U	< 1.0 U	< 1.0 U	< 0.50 U	< 1.0 U	< 1.0 U	< 1.0 U
	9/27/2013	< 1.0 U	1.6	< 1.0 U	< 1.0 U	0.27 J	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 2.0 U
	10/8/2014	< 1.0 U	1.8	< 1.0 U	< 1.0 U	0.21 J	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 UB	< 1.0 U	< 2.0 U
	11/4/2015	< 1.0 U	4.2	< 1.0 U	< 1.0 U	0.32 J	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	0.25 J	< 1.0 U	< 2.0 U
	8/18/2016	< 1.0 U	4.8	< 1.0 U	< 1.0 U	0.36 J	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 2.0 U

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Well	Date	VOCs (ug/L)											
		1,1,1-TCA	1,1-DCA	1,1-DCE	Benzene	cis-1,2-DCE	Ethyl-benzene	PCE	Toluene	trans-1,2-DCE	TCE	Vinyl Chloride	Xylenes (total)
MCL		200		7	5	70	700	5	1000	100	5	2	10,000
W-2-N	9/14/1999	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	1.6	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	1.7	< 1.0 U	< 1.0 U
	9/19/2000	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	1.2	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
	11/6/2001	0.48 J	0.33 J	< 1.0 U	< 1.0 U	1.1	< 1.0 U	< 1.0 U	< 1.0 U	< 0.50 U	1.3	< 1.0 U	< 1.0 U
	9/19/2002	< 1.0 U	0.31 J	< 1.0 U	< 1.0 U	1.6	< 1.0 U	< 1.0 U	< 1.0 U	< 0.50 U	1.4	< 1.0 U	< 1.0 U
	9/18/2003	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	1.3	< 1.0 U	< 1.0 U	< 1.0 U	< 0.50 U	< 1.0 U	< 1.0 U	< 1.0 U
	9/16/2004	0.30 J	0.36 J	< 1.0 U	< 1.0 U	1.8	< 1.0 U	0.31 J	< 1.0 U	0.20 J	1.4	< 1.0 U	< 1.0 U
	10/20/2005	< 1.0 U	0.28 J	< 1.0 U	< 1.0 U	1.3	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	0.91 J	< 1.0 U	< 2.0 U
	9/22/2006	0.25 J	0.29 J	< 1.0 UJ	< 1.0 U	1.4 J	< 1.0 UJ	< 1.0 UJ	< 1.0 UJ	0.18 J	1 J	< 1.0 UJ	< 2.0 UJ
	9/25/2007	< 1.0 U	0.22 J	< 1.0 U	< 1.0 U	1.6	< 1.0 U	< 1.0 U	0.28 J	< 1.0 U	0.88 J	< 1.0 U	< 2.0 U
	9/29/2008	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	1.7	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	0.47 J	< 1.0 U	< 2.0 U
	11/13/2009	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	1.5	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	0.37 J	< 1.0 U	< 2.0 U
	9/24/2010	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	1.4	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 2.0 U
	9/28/2011	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	1.4	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 2.0 U
	9/6/2012	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	1.3	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 2.0 U
	9/26/2013	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	0.89 J	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 2.0 U
	10/7/2014	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	1.3	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	0.20 J	< 1.0 U	< 2.0 U
	10/30/2015	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	1.4	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	0.25 J	< 1.0 U	< 2.0 U
	8/15/2016	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	2.8	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	1.6	< 1.0 U	< 2.0 U
	8/15/2017	0.28 J	< 1.0 U	< 1.0 U	< 1.0 U	2.1	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	1.2	< 1.0 U	< 2.0 U
	7/24/2018	0.38 J	0.31 J	< 1.0 U	< 1.0 U	2.7	< 1.0 U	< 1.0 U	< 1.0 U	0.28 J	1.9	< 1.0 U	< 2.0 U
	7/9/2019	< 1.0 U	0.19 J	< 1.0 U	< 1.0 U	1.8	< 1.0 U	< 1.0 U	< 1.0 U	0.22 J	1.1	< 1.0 U	< 2.0 U
W-3-N	9/17/1999	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	**291**	< 1.0 U	2.5	< 1.0 U	2.6	< 1.0 U	**13**	< 1.0 U
	9/19/2000	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	**282**	< 1.0 U	< 1.0 U	< 1.0 U	3.9	< 1.0 U	**24**	< 1.0 U
	11/7/2001	< 5.6 U	< 5.6 U	< 5.6 U	< 5.6 U	**160**	< 5.6 U	**9.0**	< 5.6 U	2.2 J	2.1 J	**7.6**	< 5.6 U
	9/23/2002	< 6.7 U	< 6.7 U	< 6.7 U	< 6.7 U	**150**	< 6.7 U	< 6.7 U	< 6.7 U	< 3.3 U	< 6.7 U	**6.5 J**	< 6.7 U
	9/17/2003	< 4.0 U	< 4.0 U	< 4.0 U	< 4.0 U	**100**	< 4.0 U	**5.1**	< 4.0 U	1.6 J	1.7 J	**6.6**	< 4.0 U
	9/16/2004	< 4.0 U	< 4.0 U	< 4.0 U	< 4.0 U	**120**	< 4.0 U	0.94 J	< 4.0 U	1.6 J	< 4.0 U	**6.1**	< 4.0 U
	10/20/2005	< 4.0 U	< 4.0 U	< 4.0 U	< 4.0 U	**84**	< 4.0 U	1.4 J	< 4.0 U	1.0 J	< 4.0 U	**8.0**	< 8.0 U
	9/25/2006	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U	**140**	< 5.0 U	< 5.0 U	< 5.0 U	1.9 J	< 5.0 U	**9.6**	< 1.0 U
	9/26/2007	< 4.0 U	< 4.0 U	< 4.0 U	< 4.0 U	**110**	< 4.0 U	< 4.0 U	< 4.0 U	1.4 J	< 4.0 U	**5.6**	< 8.0 U
	9/29/2008	< 3.3 U	< 3.3 U	< 3.3 U	< 3.3 U	**98**	< 3.3 U	< 3.3 U	< 3.3 U	1.4 J	< 3.3 U	**3.8**	< 6.7 U
	11/13/2009	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	**72**	< 2.0 U	< 2.0 U	< 2.0 U	0.99 J	< 2.0 U	**3.2**	< 4.0 U
	9/24/2010	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	56	< 2.0 U	< 2.0 U	< 2.0 U	0.79 J	< 2.0 U	**2.4**	< 4.0 U
	9/28/2011	< 2.5 U	< 2.5 U	< 2.5 U	< 2.5 U	53	< 2.5 U	0.94 J	< 2.5 U	0.80 J	< 2.5 U	**2.7**	< 5.0 U
	9/6/2012	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	41	< 2.0 U	0.60 J	< 2.0 U	0.79 J	< 2.0 U	1.4 J	< 4.0 U
	9/26/2013	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	34	< 1.0 U	0.96 J	< 1.0 U	0.64 J	< 1.0 U	1.6	< 2.0 U
	10/7/2014	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	31	< 1.0 U	0.52 J	< 1.0 U	0.47 J	< 1.0 U	1.0	< 2.0 U
	11/4/2015	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	29	< 1.0 U	< 1.0 U	< 1.0 U	0.42 J	< 1.0 U	1.3	< 2.0 U
	8/19/2016	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	22	< 1.0 U	< 1.0 U	< 1.0 U	0.34 J	< 1.0 U	1.9	< 2.0 U
	8/15/2017	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	24	< 1.0 U	< 1.0 U	< 1.0 U	0.38 J	< 1.0 U	1.4	< 2.0 U
	7/24/2018	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	16	< 1.0 U	< 1.0 U	< 1.0 U	0.33 J	< 1.0 U	1.1	< 2.0 U
	7/9/2019	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	14	< 1.0 U	< 1.0 U	< 1.0 U	0.23 J	< 1.0 U	0.81 J	< 2.0 U

Table D-1
Groundwater VOC Analytical Results for the Upper Aquifer Wells from 1999 to 2019
RACER Trust Moraine Facilities
Moraine, Ohio

Well	Date	VOCs (ug/L)											
		1,1,1-TCA	1,1-DCA	1,1-DCE	Benzene	cis-1,2-DCE	Ethyl-benzene	PCE	Toluene	trans-1,2-DCE	TCE	Vinyl Chloride	Xylenes (total)
MCL		200		7	5	70	700	5	1000	100	5	2	10,000
W-4-N	9/17/1999	< 1.0 U	1.3	< 1.0 U	< 1.0 U	2.2	< 1.0 U	2.1	< 1.0 U	< 1.0 U	**9.8**	< 1.0 U	< 1.0 U
	9/19/2000	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	2.0	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	**7.3**	< 1.0 U	< 1.0 U
	11/7/2001	0.33 J	0.89 J	< 1.0 U	< 1.0 U	1.6	< 1.0 U	0.92 J	< 1.0 U	< 0.50 U	**7.1**	< 1.0 U	< 1.0 U
	9/24/2002	0.44 J	1.7	< 1.0 U	< 1.0 U	5.2	< 1.0 U	0.94 J	< 1.0 U	0.33 J	**8.5**	0.77 J	< 1.0 U
	9/17/2003	0.26 J	0.94 J	< 1.0 U	< 1.0 U	1.7	< 1.0 U	1.1	< 1.0 U	< 0.50 U	**8.1**	0.48 J	< 1.0 U
	9/16/2004	0.40 J	1.7	< 1.0 U	< 1.0 U	5.8	< 1.0 U	1.7	< 1.0 U	0.38 J	**12**	0.49 J	< 1.0 U
	10/20/2005	< 1.0 U	1.2	< 1.0 U	< 1.0 U	2.0	< 1.0 U	1.0	< 1.0 U	< 1.0 U	**7.2**	0.54 J	< 2.0 U
	9/25/2006	< 1.0 U	1.3	< 1.0 U	< 1.0 U	2.4	< 1.0 U	0.96 J	< 1.0 U	0.19 J	**7.6**	0.56 J	< 2.0 U
	9/26/2007	0.34 J	1.6	< 1.0 U	< 1.0 U	2.6	< 1.0 U	0.88 J	< 1.0 U	0.24 J	**10**	0.96 J	< 2.0 U
	9/29/2008	0.39 J	1.9	< 1.0 U	< 1.0 U	11	< 1.0 U	0.38 J	< 1.0 U	0.92 J	**8.4**	0.34 J	< 2.0 U
	11/13/2009	0.47 J	1.6	< 1.0 U	< 1.0 U	5.7	< 1.0 U	0.68 J	< 1.0 U	0.39 J	**15**	0.25 J	< 2.0 U
	9/24/2010	0.41 J	2.1	< 1.0 U	< 1.0 U	7.9	< 1.0 U	0.67 J	< 1.0 U	0.51 J	**13**	< 1.0 U	< 2.0 U
	9/28/2011	< 1.0 U	2.4	< 1.0 U	< 1.0 U	9.7	< 1.0 U	1.1	< 1.0 U	0.59 J	**9.9**	< 1.0 U	< 2.0 U
	9/7/2012	< 1.0 U	5.6	< 1.0 U	< 1.0 U	14	< 1.0 U	0.52 J	< 1.0 U	1.2	**6.3**	< 1.0 U	< 2.0 U
	9/27/2013	< 1.0 U	7.1	< 1.0 U	< 1.0 U	11	< 1.0 U	0.63 J	< 1.0 U	0.76 J	**7.4**	0.18 J	< 2.0 U
	10/7/2014	< 1.0 U	5.7	< 1.0 U	< 1.0 U	11	< 1.0 U	0.49 J	< 1.0 U	0.69 J	**9.2**	< 1.0 U	< 2.0 U
	11/4/2015	< 1.0 U	4.2	< 1.0 U	< 1.0 U	7.0	< 1.0 U	< 1.0 U	< 1.0 U	0.51 J	**12**	< 1.0 U	< 2.0 U
	8/19/2016	< 1.0 U	4.6	< 1.0 U	< 1.0 U	9.5	< 1.0 U	< 1.0 U	< 1.0 U	0.63 J	**10**	< 1.0 U	< 2.0 U
	8/16/2017	< 1.0 U	6.5	< 1.0 U	< 1.0 U	9.2	< 1.0 U	0.38 J	< 1.0 U	0.64 J	**8.8**	< 1.0 U	< 2.0 U
	7/24/2018	< 1.0 U	6.9	< 1.0 U	< 1.0 U	8.7	< 1.0 U	0.26 J	< 1.0 U	1.3	**6.1**	< 1.0 U	< 2.0 U
	7/9/2019	< 1.0 U	7.6	< 1.0 U	< 1.0 U	6.6	< 1.0 U	0.72 J	< 1.0 U	0.88 J	**9.2**	< 1.0 U	< 2.0 U
W-1-S	9/22/1999	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	8.0	< 1.0 U	**31**	< 1.0 U	1.1	**11.6**	< 1.0 U	< 1.0 U
	9/19/2002	< 2.0 U	0.97 J	< 2.0 U	< 2.0 U	6.0	< 2.0 U	**62**	< 2.0 U	1.3	**16**	< 2.0 U	< 2.0 U
W-2-S	9/23/1999	1.9 J	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	**6.1**	< 1.0 U	< 1.0 U
	9/27/2000	1.6	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	5.0	< 1.0 U	< 1.0 U
	11/8/2001	1.7	0.58 J	< 1.0 U	< 1.0 U	0.49 J	< 1.0 U	< 1.0 U	< 1.0 U	< 0.50 U	**5.2 B**	< 1.0 U	< 1.0 U
	9/18/2002	1.5	0.98 J	< 1.0 U	< 1.0 U	0.90	< 1.0 U	< 1.0 U	< 1.0 U	< 0.50 U	4.9	< 1.0 U	< 1.0 U
	9/26/2003	1.4	0.99 J	< 1.0 U	< 1.0 U	0.74	< 1.0 U	< 1.0 U	0.25 J	< 0.50 U	**5.5**	< 1.0 U	< 1.0 U
	9/17/2004	1.5	1.3	< 1.0 U	< 1.0 U	1.1	< 1.0 U	0.55 J	< 1.0 U	< 0.50 U	**6.0**	< 1.0 U	< 1.0 U
	10/19/2005	1.6	1.2	< 1.0 U	< 1.0 U	0.78 J	< 1.0 U	0.36 J	< 1.0 U	< 1.0 U	**5.4**	< 1.0 U	< 2.0 U
	9/18/2006	1.8	1.2	< 1.0 U	< 1.0 U	1.2	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	**5.1**	< 1.0 U	< 2.0 U
	9/24/2007	1.4	1.1	< 1.0 U	< 1.0 U	0.89 J	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	**5.3**	< 1.0 U	< 2.0 U
	9/25/2008	1.4	0.92 J	< 1.0 U	< 1.0 U	0.78 J	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	**5.2**	< 1.0 U	< 2.0 U
	11/12/2009	1.7	1.2	< 1.0 U	0.43 J	0.90 J	< 1.0 UJ	0.35 J	< 1.0 U	< 1.0 U	**6.6**	< 1.0 U	< 2.0 U
	9/24/2010	1.4	1.1	< 1.0 U	< 1.0 U	0.82 J	< 1.0 U	0.33 J	< 1.0 U	< 1.0 U	**5.9**	< 1.0 U	< 2.0 U
	9/29/2011	1.6	1.2	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	0.44 J	< 1.0 U	< 1.0 U	**7.1**	< 1.0 U	< 2.0 U
	9/6/2012	1.6	1.1	< 1.0 U	< 1.0 U	1.1	< 1.0 U	0.35 J	< 1.0 U	< 1.0 U	**6.1**	< 1.0 U	< 2.0 U
	9/25/2013	1.8	0.86 J	< 1.0 U	< 1.0 U	1.1	< 1.0 U	0.31 J	< 1.0 U	< 1.0 U	**6.4**	< 1.0 U	< 2.0 U
	10/7/2014	0.79 J	0.80 J	< 1.0 U	< 1.0 U	1.6	< 1.0 U	0.33 J	< 1.0 U	0.34 J	5.0	< 1.0 U	< 2.0 U
	11/5/2015	< 1.0 U	0.63 J	< 1.0 U	< 1.0 U	1.1	< 1.0 U	0.36 J	< 1.0 U	0.47 J	23	< 1.0 U	< 2.0 U
	8/23/2016	1.4	1.0	< 1.0 U	< 1.0 U	1.9	< 1.0 U	0.34 J	< 1.0 U	0.30 J	**6.6**	< 1.0 U	< 2.0 U
	8/16/2017	1.3	1.1	< 1.0 U	< 1.0 U	2.4	< 1.0 U	< 1.0 U	< 1.0 U	0.40 J	**5.9**	< 1.0 U	< 2.0 U
	7/25/2018	0.98 J	0.83 J	< 1.0 U	< 1.0 U	2.2	< 1.0 U	2.0	< 1.0 U	0.32 J	**4.6**	< 1.0 U	< 2.0 U
	7/9/2019	0.60 J	0.23 J	< 1.0 U	< 1.0 U	0.29 J	< 1.0 U	**20**	< 1.0 U	< 1.0 U	2.8	< 1.0 U	< 2.0 U

Table D-1
Groundwater VOC Analytical Results for the Upper Aquifer Wells from 1999 to 2019
RACER Trust Moraine Facilities
Moraine, Ohio

Well	Date	VOCs (ug/L)											
		1,1,1-TCA	1,1-DCA	1,1-DCE	Benzene	cis-1,2-DCE	Ethyl-benzene	PCE	Toluene	trans-1,2-DCE	TCE	Vinyl Chloride	Xylenes (total)
MCL		200		7	5	70	700	5	1000	100	5	2	10,000
W-3-S	9/23/1999	3.9	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	1.1	< 1.0 U	< 1.0 U	2.6	< 1.0 U	< 1.0 U
	9/28/2000	2.8	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	2.5	< 1.0 U	< 1.0 U
	11/8/2001	1.6	< 1.0 U	< 1.0 U	< 1.0 U	< 0.50 U	< 1.0 U	0.44 J	< 1.0 U	< 0.50 U	1.5 B	< 1.0 U	< 1.0 U
	9/18/2002	2.1	< 1.0 U	< 1.0 U	< 1.0 U	< 0.50 U	< 1.0 U	0.61 J	< 1.0 U	< 0.50 U	2.4	< 1.0 U	< 1.0 U
	9/26/2003	1.8	< 1.0 U	< 1.0 U	< 1.0 U	0.34 J	< 1.0 U	0.81 J	< 1.0 U	< 0.50 U	2.0	< 1.0 U	< 1.0 U
	9/17/2004	2.4	0.21 J	< 1.0 U	< 1.0 U	< 0.50 U	< 1.0 U	1.2	< 1.0 U	< 0.50 U	2.9	< 1.0 U	< 1.0 U
	10/19/2005	2.5	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	1.0	< 1.0 U	< 1.0 U	2.9	< 1.0 U	< 2.0 U
	9/18/2006	2.5	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	0.60 J	< 1.0 U	< 1.0 U	3.4	< 1.0 U	< 2.0 U
	9/24/2007	1.4	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	0.72 J	< 1.0 U	< 1.0 U	2.0	< 1.0 U	< 2.0 U
	9/26/2008	1.2	0.21 J	< 1.0 U	< 1.0 U	0.52 J	< 1.0 U	1.3	< 1.0 U	< 1.0 U	2.1	< 1.0 U	< 2.0 U
	11/12/2009	1.2	< 1.0 U	< 1.0 U	< 1.0 U	0.33 J	< 1.0 UJ	0.87 J	< 1.0 U	< 1.0 U	2.5	< 1.0 U	< 2.0 U
	9/23/2010	0.87 J	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	0.95 J	< 1.0 U	< 1.0 U	2.3	< 1.0 U	< 2.0 U
	9/29/2011	0.51 J	0.38 J	< 1.0 U	< 1.0 U	0.72 J	< 1.0 U	2.8	< 1.0 U	0.19 J	2.6	< 1.0 U	< 2.0 U
	9/6/2012	0.60 J	0.89 J	< 1.0 U	< 1.0 U	1.0	< 1.0 U	4.4	< 1.0 U	0.49 J	**5.7**	< 1.0 U	< 2.0 U
	9/25/2013	0.49 J	1.2	< 1.0 U	< 1.0 U	1.4	< 1.0 U	**25**	< 1.0 U	0.59 J	**21**	< 1.0 U	< 2.0 U
	10/7/2014	0.76 J	0.96 J	< 1.0 U	< 1.0 U	2.3	< 1.0 U	**38**	< 1.0 U	0.59 J	**35**	< 1.0 U	< 2.0 U
	11/4/2015	< 1.0 U	0.41 J	< 1.0 U	< 1.0 U	2.6	< 1.0 U	**65**	< 1.0 U	0.31 J	**97**	< 1.0 U	< 2.0 U
	8/23/2016	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	2.1	< 2.0 U	**62**	< 2.0 U	< 2.0 U	**11**	< 2.0 U	< 4.0 U
	8/16/2017	0.62 J	0.66 J	< 1.0 U	< 1.0 U	1.6	< 1.0 U	**68**	< 1.0 U	< 1.0 U	**7.6**	< 1.0 U	< 2.0 U
	7/25/2018	0.87 J	0.61 J	< 1.0 U	< 1.0 U	1.1	< 1.0 U	**19**	< 1.0 U	0.19 J	**27**	< 1.0 U	< 2.0 U
	7/9/2019	2.5	0.83 J	< 1.0 U	< 1.0 U	1.1	< 1.0 U	**81**	< 1.0 U	< 1.0 U	**5.6**	< 1.0 U	< 2.0 U
W-4-S	9/23/1999	3.3	1.2	< 1.0 U	< 1.0 U	4.4	< 1.0 U	**31 J**	< 1.0 U	< 1.0 U	**15 J**	< 1.0 U	< 1.0 U
	9/28/2000	3.0	1.0	< 1.0 U	< 1.0 U	4.0	< 1.0 U	**15**	< 1.0 U	< 1.0 U	**11**	< 1.0 U	< 1.0 U
	11/8/2001	2.9	1.1	< 1.0 U	< 1.0 U	3.3	< 1.0 U	**13**	< 1.0 U	0.43 J	**8.9 B**	< 1.0 U	< 1.0 U
	9/18/2002	2.3	0.87 J	< 1.0 U	< 1.0 U	3.6	< 1.0 U	**17**	< 1.0 U	0.60	**9.8**	< 1.0 U	< 1.0 U
	9/26/2003	2.0	0.92 J	< 1.0 U	< 1.0 U	3.6	< 1.0 U	**24**	0.25 J	0.78	**13**	< 1.0 U	< 1.0 U
	9/17/2004	2.3	1.2	< 1.0 U	< 1.0 U	4.4	< 1.0 U	**18**	< 1.0 U	0.97	**13**	< 1.0 U	< 1.0 U
	10/19/2005	2.4	1.4	< 1.0 U	< 1.0 U	4.3	< 1.0 U	**20**	< 1.0 U	1.1	**13**	< 1.0 U	< 2.0 U
	9/19/2006	1.7	1.3	< 1.0 U	< 1.0 U	4.3	< 1.0 U	**18**	< 1.0 U	1.0	**12**	< 1.0 U	< 2.0 U
	9/24/2007	1.5	1.8	< 1.0 U	< 1.0 U	5.9	< 1.0 U	**26**	< 1.0 U	1.3	**16**	< 1.0 U	< 2.0 U
	9/26/2008	0.95 J	1.3	0.21 J	< 1.0 U	6	< 1.0 U	**32**	< 1.0 U	1.2	**16**	< 1.0 U	< 2.0 U
	11/12/2009	1.3	1.6	< 1.0 U	< 1.0 U	9.1	< 1.0 U	**39**	< 1.0 U	1.5	**23**	< 1.0 U	< 2.0 U
	9/23/2010	1.1	1.6	< 1.0 U	< 1.0 U	9.1	< 1.0 U	**31**	< 1.0 U	1.5	**20**	< 1.0 U	< 2.0 U
	9/29/2011	1.1	1.5	< 1.0 U	< 1.0 U	8.9	< 1.0 U	**31**	< 1.0 U	1.4	**21**	< 1.0 U	< 2.0 U
	9/6/2012	1.0 J	1.6 J	< 1.0 U	< 1.0 U	9.4	< 1.0 U	**26**	< 1.0 U	1.4 J	**21**	< 1.0 U	< 3.3 U
	9/25/2013	1.6	1.9	< 1.0 U	< 1.0 U	6.3	< 1.0 U	**60**	< 1.0 U	1.2	**50**	< 1.0 U	< 2.0 U
	10/7/2014	1.4 J	1.3 J	< 2.5 U	< 2.5 U	6.1	< 2.5 U	**65**	< 2.5 U	1.1 J	**63**	< 2.5 U	< 5.0 U
	11/4/2015	1.9 J	2.3	< 2.0 U	< 2.0 U	9.7	< 2.0 U	**74**	< 2.0 U	1.4 J	**72**	< 2.0 U	< 4.0 U
	8/23/2016	1.6 J	1.7 J	< 2.0 U	< 2.0 U	12	< 2.0 U	**54**	< 2.0 U	1.1 J	**45**	< 2.0 U	< 4.0 U
	8/16/2017	1.5	2.7	< 1.0 U	< 1.0 U	22	< 1.0 U	**39**	< 1.0 U	2.1	**40**	< 1.0 U	< 2.0 U
	7/25/2018	1.8	2.1	< 1.0 U	< 1.0 U	17	< 1.0 U	**68**	< 1.0 U	1.5	**42**	< 1.0 U	< 2.0 U
	7/9/2019	1.7	1.6	< 1.0 U	< 1.0 U	13	< 1.0 U	**70**	< 1.0 U	1.2	**33**	< 1.0 U	< 2.0 U

Table D-1
Groundwater VOC Analytical Results for the Upper Aquifer Wells from 1999 to 2019
RACER Trust Moraine Facilities
Moraine, Ohio

Well	Date	VOCs (ug/L)											
		1,1,1-TCA	1,1-DCA	1,1-DCE	Benzene	cis-1,2-DCE	Ethyl-benzene	PCE	Toluene	trans-1,2-DCE	TCE	Vinyl Chloride	Xylenes (total)
MCL		200		7	5	70	700	5	1000	100	5	2	10,000
EAST	9/21/1999	21	5.4	< 1.0 U	< 1.0 U	9.1	< 1.0 U	**61**	< 1.0 U	< 1.0 U	**56**	< 1.0 U	< 1.0 U
	9/22/2000	22	7.7	1.2	< 1.0 U	**77**	< 1.0 U	**56**	< 1.0 U	1.8	**97**	**3.0**	< 1.0 U
	11/12/2001	13	6.2	0.90 J	< 3.3 U	51	< 3.3 U	**56**	< 3.3 U	2.7	**92**	1.5 J	< 3.3 U
	9/23/2002	10	3.9	0.73 J	< 2.0 U	8.8	< 2.0 U	**49**	< 2.0 U	< 1.0 U	**46**	< 2.0 U	< 2.0 U
	9/25/2003	7.1	2.3	< 2.0 U	< 2.0 U	4.3	< 2.0 U	**47**	< 2.0 U	< 1.0 U	**35**	< 2.0 U	< 2.0 U
	9/13/2004	5.7	0.72 J	0.34 J	< 1.0 U	1.6	< 1.0 U	**40**	< 1.0 U	< 0.50 U	**23**	< 1.0 U	< 1.0 U
	10/18/2005	5.9	3.0	< 1.0 U	< 1.0 U	3.1	< 1.0 U	**47**	< 1.0 U	< 1.0 U	**23**	1.2	< 2.0 U
	9/21/2006	10	3.2	0.59 J	< 1.0 U	4.1	< 1.0 U	**41**	< 1.0 U	< 1.0 U	**29**	< 1.0 U	< 2.9 U
WEST	9/21/1999	25	26	< 1.0 U	< 1.0 U	**125**	< 1.0 U	**41**	< 1.0 U	< 1.0 U	**37**	< 1.0 U	< 1.0 U
Downgradient of the Site													
4S	9/20/1999	< 1.0 U	1.6	< 1.0 U	1.6	< 1.0 U	<10	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 10 U
	10/2/2003	< 2.0 U	7.0	< 2.0 U	1.6 J	< 1.0 U	1.7 J	< 2.0 U	< 2.0 U	1.7	< 2.0 U	< 2.0 U	< 2.0 U
	9/14/2004	< 5.0 U	7.5	< 5.0 U	4.5 J	< 2.5 U	4.7 J	< 5.0 U	1.1 J	< 2.5 U	< 5.0 U	< 5.0 U	2.4 J
	10/19/2005	< 4.0 U	2.3 J	< 4.0 U	1.6 J	< 4.0 U	1.6 J	< 4.0 U	< 4.0 U	0.95 J	< 4.0 U	< 4.0 U	< 8.0 U
	9/20/2006	< 1.0 U	5.6	< 1.0 U	0.7 J	0.25 J	0.52 J	< 1.0 U	< 1.0 U	0.75 J	< 1.0 U	< 1.0 U	< 2.0 U
GM-2	9/20/1999	5.5	1.4	< 1.0 U	< 1.0 U	8.4	<10	**6.0**	< 1.0 U	< 1.0 U	**62**	< 1.0 U	< 10 U
	9/25/2000	5.7	3.7	< 1.0 U	< 1.0 U	39	< 1.0 U	**7.7**	< 1.0 U	1.3	**83**	1.7	< 1.0 U
	11/9/2001	6.1	6.1	< 3.3 U	< 3.3 U	26	< 3.3 U	**8.4**	< 3.3 U	1.1J	**65**	< 3.3 U	< 3.3 U
	9/20/2002	0.75 J	3.4	< 1.0 U	< 1.0 U	7.6	< 1.0 U	**8.7**	< 1.0 U	0.37J	**26**	< 1.0 U	< 1.0 U
	10/2/2003	0.21 J	1.7	< 1.0 U	< 1.0 U	4.7	0.21 J	**5.7**	< 1.0 U	< 0.50 U	**13**	0.46 J	< 1.0 U
	9/14/2004	< 1.0 U	1.6	< 1.0 U	< 1.0 U	5.6	< 1.0 U	4.0	< 1.0 U	0.23 J	**6.2**	< 1.0 U	< 1.0 U
	10/19/2005	< 1.0 U	2.0	< 1.0 U	< 1.0 U	6.8	< 1.0 U	3.6	< 1.0 U	0.26 J	4.6	0.24 J	< 2.0 U
	9/20/2006	< 1.0 U	2.1	< 1.0 U	< 1.0 U	7.7	< 1.0 U	2.6	< 1.0 U	0.34 J	**5.1**	0.61 J	< 2.0 U
	9/18/2007	< 1.0 U	1.4	< 1.0 U	< 1.0 U	4.9	< 1.0 U	1.6	< 1.0 U	0.28 J	2.3	1.1	< 2.0 U
	9/24/2008	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	6.7	< 1.0 U	1.3	< 1.0 U	0.19 J	2.4	< 1.0 U	< 2.0 U
	11/11/2009	< 1.0 U	1.0	< 1.0 U	< 1.0 U	3.2	< 1.0 U	0.90 J	< 1.0 U	< 1.0 U	1.4	**2.3**	< 2.0 U
	9/27/2010	< 1.0 U	1.2	< 1.0 U	< 1.0 U	3.8	< 1.0 U	0.44 J	< 1.0 U	< 1.0 U	0.95 J	**2.5**	< 2.0 U
	9/29/2011	< 1.0 U	0.92 J	< 1.0 U	< 1.0 U	9.0	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	0.75 J	0.69 J	< 2.0 U
	9/6/2012	< 1.0 U	0.71 J	< 1.0 U	< 1.0 U	15	< 1.0 U	< 1.0 U	0.46 J	< 1.0 U	0.96 J	1.2	< 2.0 U
	9/25/2013	< 1.0 U	1.0	< 1.0 U	< 1.0 U	13	< 1.0 U	0.31 J	< 1.0 U	0.26 J	0.70 J	1.3	< 2.0 U
	10/7/2014	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	1.6	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	2.9	< 1.0 U	< 2.0 U
	12/8/2015	< 1.0 U	0.40 J	< 1.0 U	< 1.0 U	3.2	< 1.0 U	3.6	< 1.0 U	< 1.0 U	**6.7**	< 1.0 U	< 2.0 U
	8/19/2016	< 1.0 U	0.43 J	< 1.0 U	< 1.0 U	8.9	< 1.0 U	**8.5**	< 1.0 U	< 1.0 U	**6.3**	< 1.0 U	< 2.0 U
	7/12/2019	0.33 J	< 1.0 U	< 1.0 U	< 1.0 U	0.33 J	< 1.0 U	**28**	< 1.0 U	< 1.0 U	**7.4**	< 1.0 U	< 2.0 U

Table D-1
Groundwater VOC Analytical Results for the Upper Aquifer Wells from 1999 to 2019
RACER Trust Moraine Facilities
Moraine, Ohio

Well	Date	VOCs (ug/L)											
		1,1,1-TCA	1,1-DCA	1,1-DCE	Benzene	cis-1,2-DCE	Ethyl-benzene	PCE	Toluene	trans-1,2-DCE	TCE	Vinyl Chloride	Xylenes (total)
MCL		200		7	5	70	700	5	1000	100	5	2	10,000
GM-10	9/21/1999	1.7	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	**15**	< 1.0 U	< 1.0 U
	9/27/2000	2.5	1.4	< 1.0 U	< 1.0 U	5.7	< 1.0 U	1.4	< 1.0 U	< 1.0 U	**23**	< 1.0 U	< 1.0 U
	11/8/2001	2.7	3.4	< 1.0 U	< 1.0 U	16	< 1.0 U	1.9	< 1.0 U	0.93	**27**	1.2	< 1.0 U
	9/18/2002	1.8	0.61 J	< 1.0 U	< 1.0 U	2.3	< 1.0 U	1.1	< 1.0 U	< 0.50 U	**19**	< 1.0 U	< 1.0 U
	9/24/2003	0.96 J	< 1.0 U	< 1.0 U	< 1.0 U	< 0.50 U	< 1.0 U	2.2	< 1.0 U	< 0.50 U	**33**	< 1.0 U	< 1.0 U
	9/14/2004	1.2	< 1.0 U	< 1.0 U	< 1.0 U	0.38 J	< 1.0 U	1.5	< 1.0 U	< 0.50 U	**15**	< 1.0 U	< 1.0 U
	10/20/2005	1.6	< 1.0 U	< 1.0 U	< 1.0 U	0.31 J	< 1.0 U	1.2	< 1.0 U	< 1.0 U	**12**	< 1.0 U	< 2.0 U
	9/27/2006	0.90 J	0.29 J	< 1.0 U	< 1.0 U	0.77 J	< 1.0 U	0.98 J	< 1.0 U	< 1.0 U	**11**	< 1.0 U	< 2.0 U
	9/19/2007	0.75 J	< 1.0 U	< 1.0 U	< 1.0 U	0.35 J	< 1.0 U	0.93 J	< 1.0 U	< 1.0 U	**8.8**	< 1.0 U	< 2.0 U
	9/24/2008	0.53 J	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	0.85 J	< 1.0 U	< 1.0 U	**5.9**	< 1.0 U	< 2.0 U
	9/25/2013	0.20 J	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	1.1	< 1.0 U	< 1.0 U	3.1	< 1.0 U	< 2.0 U
	10/6/2014	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	1.0	< 1.0 U	< 1.0 U	3.1	< 1.0 U	< 2.0 U
	11/3/2015	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	0.85 J	< 1.0 U	< 1.0 U	2.2	< 1.0 U	< 2.0 U
GM-16	9/21/1999	2.2	< 1.0 U	< 1.0 U	< 1.0 U	1.7	< 1.0 U	**44**	< 1.0 U	< 1.0 U	**8.5**	< 1.0 U	< 1.0 U
	9/26/2000	2.5	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	**16**	< 1.0 U	< 1.0 U	3.5	< 1.0 U	< 1.0 U
	11/8/2001	2.2	0.31 J	< 1.0 U	< 1.0 U	0.39 J	< 1.0 U	**17**	< 1.0 U	< 0.50 U	3.6	< 1.0 U	< 1.0 U
	9/24/2002	1.4 J	4.1	< 2.0 U	< 2.0 U	6.2	< 2.0 U	**63**	< 2.0 U	1.6	**28**	< 2.0 U	< 2.0 U
	9/22/2003	1.9 J	2.8 J	< 4.0 U	< 4.0 U	5.8	< 4.0 U	**110**	< 4.0 U	1.1 J	**57**	< 4.0 U	< 4.0 U
	9/16/2004	3.1 J	4.3	< 3.3 U	< 3.3 U	7.4	< 3.3 U	**130**	< 3.3 U	1.0 J	**90**	< 3.3 U	< 3.3 U
	10/19/2005	1.7 J	1.1 J	< 3.3 U	< 3.3 U	2.8 J	< 3.3 U	**100**	< 3.3 U	0.90 J	**55**	< 3.3 U	< 6.7 U
	9/18/2006	2.1	1.1 J	< 1.0 U	< 1.0 U	3.8	< 1.0 U	**98**	< 1.0 U	1 J	**51**	< 1.0 U	< 2.9 U
	9/25/2007	1.4 J	1.5 J	< 4.0 U	< 4.0 U	43	< 4.0 U	**94**	< 4.0 U	1.3 J	**52**	< 4.0 U	< 8.0 U
	9/30/2008	1.8 J	3.8	< 3.3 U	< 3.3 U	20	< 3.3 U	**100**	< 3.3 U	1.1 J	**48**	< 3.3 U	< 6.7 U
	11/16/2009	1.4 J	1.6 J	< 3.3 U	< 3.3 U	12	< 3.3 U	**110**	< 3.3 U	1.5 J	**74**	< 3.3 U	< 6.7 U
	9/23/2010	1.1 J	1.3 J	< 4.0 U	< 4.0 U	2.2 J	< 4.0 U	**110**	< 4.0 U	1.2 J	**75**	< 4.0 U	< 8.0 U
	9/29/2011	< 3.3 U	5.5	< 3.3 U	< 3.3 U	23	< 3.3 U	**64**	< 3.3 U	0.77 J	**45**	1.2 J	< 6.7 U
	9/5/2012	0.94 J	3.8 J	< 4.0 U	< 4.0 U	12	< 4.0 U	**66**	< 4.0 U	< 4.0 U	**41**	< 4.0 U	< 8.0 U
	9/25/2013	0.36 J	4.4	< 1.0 U	< 1.0 U	12	< 1.0 U	**51**	< 1.0 U	0.40 J	**17**	0.55 J	< 2.0 U
	10/7/2014	< 1.0 U	1.4	< 1.0 U	< 1.0 U	7.7	< 1.0 U	**31**	< 1.0 U	0.26 J	**7.5**	0.97 J	< 2.0 U
	11/4/2015	< 1.0 U	1.5	< 1.0 U	< 1.0 U	12	< 1.0 U	**35**	< 1.0 U	0.34 J	**8.3**	10	< 2.0 U
	8/18/2016	< 1.0 U	1.8	< 1.0 U	< 1.0 U	7.4	< 1.0 U	**23**	< 1.0 U	< 1.0 U	**5.7**	0.31 J	< 2.0 U
	7/8/2019	< 1.0 U	0.54 J	< 1.0 U	< 1.0 U	5.6	< 1.0 U	**13**	< 1.0 U	< 1.0 U	3.0	0.45 J	< 2.0 U

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Moraine, Ohio

Well	Date	VOCs (ug/L)											
		1,1,1-TCA	1,1-DCA	1,1-DCE	Benzene	cis-1,2-DCE	Ethyl-benzene	PCE	Toluene	trans-1,2-DCE	TCE	Vinyl Chloride	Xylenes (total)
MCL		200		7	5	70	700	5	1000	100	5	2	10,000
GM-17	9/21/1999	6.4	26	< 1.0 U	< 1.0 U	30	< 1.0 U	< 1.0 U	< 1.0 U	2.6	**29**	1.4	< 1.0 U
	9/27/2000	6.7	24	< 1.0 U	< 1.0 U	42	< 1.0 U	**25**	< 1.0 U	2.5	**48**	< 1.0 U	< 1.0 U
	11/8/2001	6.8	7.3	< 3.3 U	< 3.3 U	16	< 3.3 U	**48**	< 3.3 U	1.8	**79**	< 3.3 U	< 3.3 U
	9/19/2002	2.3	6.0	< 1.0 U	< 1.0 U	13	< 1.0 U	**22**	< 1.0 U	0.67	**39**	0.79 J	< 1.0 U
	9/24/2003	1.3	1.2	< 1.0 U	< 1.0 U	2.9	< 1.0 U	**12**	< 1.0 U	< 0.50 U	**24**	< 1.0 U	< 1.0 U
	9/15/2004	1.1	4	< 1.0 U	< 1.0 U	11	< 1.0 U	3.6	< 1.0 U	0.64	**22**	0.49 J	< 1.0 U
	10/20/2005	1.4	5.5	< 1.0 U	< 1.0 U	9.0	< 1.0 U	**8.1**	< 1.0 U	0.57 J	**29**	2.0	< 2.0 U
	9/27/2006	0.46 J	3.2	< 1.0 U	< 1.0 U	9.5	< 1.0 U	**11**	< 1.0 U	0.49 J	**24**	0.54 J	< 2.0 U
	9/18/2007	0.31 J	1.5	< 1.0 U	< 1.0 U	4.0	< 1.0 U	**7.3**	< 1.0 U	0.22 J	**15**	< 1.0 U	< 2.0 U
	9/24/2008	0.29 J	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	4.8	< 1.0 U	< 1.0 U	**10**	< 1.0 U	< 2.0 U
	9/27/2013	< 1.0 U	0.36 J	< 1.0 U	< 1.0 U	2.6	< 1.0 U	2.8	< 1.0 U	< 1.0 U	4.7	< 1.0 U	< 2.0 U
GM-18	9/22/1999	43	23	1.3	< 1.0 U	35	< 1.0 U	4.9	< 1.0 U	2.2	**131**	< 1.0 U	< 1.0 U
	9/27/2000	32	10	< 1.0 U	< 1.0 U	24	< 1.0 U	**7.8**	< 1.0 U	1.8	**115**	< 1.0 U	< 1.0 U
	11/8/2001	23	3.3	1.3J	< 3.3 U	14	< 3.3 U	**12**	< 3.3 U	1.6 J	**93**	< 3.3 U	< 3.3 U
	9/19/2002	18	6.0	< 3.3 U	< 3.3 U	15	< 3.3 U	**28**	< 3.3 U	1.6 J	**98**	< 3.3 U	< 3.3 U
	9/22/2003	10	3.7	< 2.0 U	< 2.0 U	8.8	< 2.0 U	**24**	< 2.0 U	< 1.0 U	**77**	0.75 J	< 2.0 U
	9/15/2004	5.2	2.2	0.46 J	< 2.0 U	5.9	< 2.0 U	**20**	< 2.0 U	< 1.0 U	**53**	< 2.0 U	< 2.0 U
	10/20/2005	7.0	15	0.30 J	< 1.0 U	14	< 1.0 U	**21**	< 1.0 U	1.2	**70 J**	**3.0**	< 2.0 U
	9/27/2006	6.2	17	< 2.9 U	< 2.9 U	21	< 2.9 U	**15**	< 2.9 U	2 J	**72**	**2.5 J**	< 5.7 U
	9/19/2007	5.4	13	< 2.5 U	< 2.5 U	19	< 2.5 U	**14**	< 2.5 U	1.2 J	**64**	1.1 J	< 5.0 U
	9/24/2008	2.3	< 6.1 U	< 1.0 U	< 1.0 U	13	< 1.0 U	**16**	< 1.0 U	0.79 J	**38**	< 1.0 U	< 2.9 U
	9/25/2013	0.22 J	0.68 J	< 1.0 U	< 1.0 U	3.7	< 1.0 U	**17**	< 1.0 U	< 1.0 U	**10**	< 1.0 U	< 2.0 U
	12/11/2015	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	0.78 J	< 1.0 U	**6.2**	< 1.0 U	< 1.0 U	**6.5**	< 1.0 U	< 2.0 U
GM-25	9/22/1999	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
	10/21/2010	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 2.0 U

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Moraine, Ohio

Well	Date	VOCs (ug/L)											
		1,1,1-TCA	1,1-DCA	1,1-DCE	Benzene	cis-1,2-DCE	Ethyl-benzene	PCE	Toluene	trans-1,2-DCE	TCE	Vinyl Chloride	Xylenes (total)
MCL		200		7	5	70	700	5	1000	100	5	2	10,000
GM-26	9/22/1999	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
	9/27/2000	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
	11/12/2001	0.19 J	< 1.0 U	< 1.0 U	< 1.0 U	< 0.50 U	< 1.0 U	1.1	< 1.0 U	< 0.50 U	< 1.0 U	< 1.0 U	< 1.0 U
	9/25/2002	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 0.50 U	< 1.0 U	0.92 J	< 1.0 U	< 0.50 U	< 1.0 U	< 1.0 U	< 1.0 U
	10/1/2003	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 0.50 U	< 1.0 U	0.85 J	< 1.0 U	< 0.50 U	< 1.0 U	< 1.0 U	< 1.0 U
	9/16/2004	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 0.50 U	< 1.0 U	1.3	< 1.0 U	< 0.50 U	< 1.0 U	< 1.0 U	< 1.0 U
	10/20/2005	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	1.0	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 2.0 U
	9/21/2006	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	0.91 J	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 2.0 U
	9/27/2007	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	1.2	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 2.0 U
	1/21/2008	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 UJ	< 1.0 U	< 1.0 U	1.2	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 2.0 U
	10/1/2008	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	1.4	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 2.0 U
	11/12/2009	< 1.0 U	< 1.0 U	< 1.0 U	0.51 J	< 1.0 U	< 1.0 U	1.6	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 2.0 U
	9/22/2010	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	1.6	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 2.0 U
	9/28/2011	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	1.6	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 2.0 U
	9/5/2012	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	1.6	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 2.0 U
	9/25/2013	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	1.6	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 2.0 U
	10/6/2014	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	1.3	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 2.0 U
	10/30/2015	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	1.1	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 2.0 U
	8/15/2016	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	1.3	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 2.0 U
GM-46	3/2/2006	< 1.0 U	2.7	< 1.0 U	< 1.0 U	6.8	< 1.0 U	< 1.0 U	< 1.0 U	0.35 J	**22**	1.9	< 2.0 U
	11/30/2006	< 1.0 U	0.43 J	< 1.0 U	< 1.0 U	5.2	< 1.0 U	0.67 J	< 1.0 U	< 1.0 U	1.5	1.5	< 2.0 U
	10/9/2014	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	0.30 J	< 1.0 U	0.46 J	< 1.0 U	< 1.0 U	< 1.0 UB	< 1.0 U	< 2.0 U
	11/3/2015	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	0.41 J	< 1.0 U	0.47 J	< 1.0 U	< 1.0 U	0.30 J	< 1.0 U	< 2.0 U
GM-47	3/1/2006	2.2	1.8	< 1.0 U	< 1.0 U	7.2	< 1.0 U	**78**	0.28 J	1.5	**50**	< 1.0 U	< 2.0 U
	9/19/2006	2.2	1.7 J	< 2.0 U	< 2.0 U	9.5	< 2.0 U	**64**	< 2.0 U	1.4 J	**44**	< 2.0 U	< 4.0 U
	11/30/2006	1.9 J	1.7 J	< 2.0 U	< 2.0 U	8.9	< 2.0 U	**69**	< 2.0 U	1.4 J	**51**	< 2.0 U	< 4.0 U
	9/25/2007	2.2 J	2.4 J	< 7.1 U	< 7.1 U	**170**	< 7.1 U	**71**	< 7.1 U	4.6 J	**53**	< 7.1 U	< 1.0 U
	10/1/2008	1.4 J	2 J	< 5.0 U	< 5.0 U	**160**	< 5.0 U	**86**	< 5.0 U	3.9 J	**36**	1.9 J	< 1.0 U
	11/13/2009	1.0 J	2.4 J	< 2.5 U	< 2.5 U	61	< 2.5 U	**61**	< 2.5 U	2.8	**29**	0.66 J	< 5.0 U
	1/28/2010	0.85 J	2.3 J	< 2.5 U	< 2.5 U	51	< 2.5 U	**60**	< 2.5 U	2.5	**24**	< 2.5 U	< 5.0 U
	9/23/2010	0.77 J	2.7	< 1.0 U	< 1.0 U	42	< 1.0 U	**60**	< 1.0 U	2.4	**22**	0.39 J	< 3.3 U
	9/29/2011	< 2.5 U	2.9	< 2.5 U	< 2.5 U	34	< 2.5 U	**52**	< 2.5 U	2.3 J	**18**	< 2.5 U	< 5.0 U
	9/6/2012	< 2.5 U	3.0	< 2.5 U	< 2.5 U	23	< 2.5 U	**42**	< 2.5 U	2.0 J	**13**	< 2.5 U	< 5.0 U
	9/25/2013	0.65 J	3.7	< 1.0 U	< 1.0 U	26	< 1.0 U	**47**	< 1.0 U	2.4	**14**	0.42 J	< 2.0 U
	10/7/2014	< 1.0 U	4.5	< 1.0 U	< 1.0 U	28	< 1.0 U	**46**	< 1.0 U	1.8	**8.1**	< 1.0 U	< 3.3 U
	11/4/2015	< 1.7 U	4.9	< 1.7 U	< 1.0 U	46	< 1.7 U	**49**	< 1.7 U	2.3	**8.3**	< 1.7 U	< 3.3 U
	8/24/2016	< 2.0 U	3.8	< 2.0 U	< 2.0 U	38	< 2.0 U	**39**	< 2.0 U	1.8 J	4.4	< 2.0 U	< 4.0 U
	7/10/2019	< 1.0 U	5.2	< 1.0 U	< 1.0 U	29	< 1.0 U	**40**	< 1.0 U	0.81 J	**9.3**	0.60 J	< 2.0 U
GM-48	3/1/2006	0.62 J	0.71 J	< 1.0 U	< 1.0 U	0.7 J	< 1.0 U	< 1.0 U	0.25 J	< 1.0 U	2.1	< 1.0 U	< 2.0 U
	11/30/2006	0.97 J	0.72 J	< 1.0 U	< 1.0 U	0.83 J	< 1.0 U	0.26 J	< 1.0 U	0.19 J	2.4	< 1.0 U	< 2.0 U
	7/10/2019	< 1.0 U	0.19 J	< 1.0 U	< 1.0 U	0.89 J	< 1.0 U	**28**	< 1.0 U	< 1.0 U	1.3	< 1.0 U	< 2.0 U

Table D-1
Groundwater VOC Analytical Results for the Upper Aquifer Wells from 1999 to 2019
RACER Trust Moraine Facilities
Moraine, Ohio

Well	Date	VOCs (ug/L)											
		1,1,1-TCA	1,1-DCA	1,1-DCE	Benzene	cis-1,2-DCE	Ethyl-benzene	PCE	Toluene	trans-1,2-DCE	TCE	Vinyl Chloride	Xylenes (total)
MCL		200		7	5	70	700	5	1000	100	5	2	10,000
GM-49	3/1/2006	2.4	3.4	< 1.0 U	< 1.0 U	4.7	< 1.0 U	2.5	0.25 J	0.66 J	**8.4**	< 1.0 U	< 2.0 U
	11/30/2006	1.8	2.6	< 1.0 U	< 1.0 U	3.8	< 1.0 U	3.1	< 1.0 U	0.53 J	**11**	< 1.0 U	< 2.0 U
	7/10/2019	< 1.0 U	0.21 J	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	1.2	< 1.0 U	< 1.0 U	2.4	< 1.0 U	< 2.0 U
GM-50	4/28/2006	2.4 J	1.9 J	< 5.0 U	< 5.0 U	5.2	< 5.0 U	**180**	< 5.0 U	1.6 J	**120**	< 5.0 U	< 1.0 U
	9/19/2006	1.4 J	1.5 J	< 5.6 U	< 5.6 U	13	< 5.6 U	**150**	< 5.6 U	1.7 J	**84**	< 5.6 U	< 1.0 U
	11/30/2006	1.6 J	1.5 J	< 5.0 U	< 5.0 U	34	< 5.0 U	**140**	< 5.0 U	1.5 J	**86**	< 5.0 U	< 1.0 U
	9/25/2007	1.4 J	1.9 J	< 5.9 U	< 5.9 U	**130**	< 5.9 U	**100**	< 5.9 U	2.5 J	**44**	< 5.9 U	< 1.0 U
	10/1/2008	1.6 J	1.7 J	< 2.5 U	< 2.5 U	13	< 2.5 U	**82**	< 2.5 U	0.68 J	**54**	< 2.5 U	< 5.0 U
	11/13/2009	1.8 J	1.3 J	< 5.0 U	< 5.0 U	11	< 5.0 U	**110**	< 5.0 U	< 5.0 U	**120**	< 5.0 U	< 1.0 U
	1/28/2010	1.5 J	1.2 J	< 5.0 U	< 5.0 U	8.1	< 5.0 U	**130**	< 5.0 U	< 5.0 U	**120**	< 5.0 U	< 1.0 U
	9/23/2010	1.6 J	< 5.0 U	< 5.0 U	< 5.0 U	4.0 J	< 5.0 U	**130**	< 5.0 U	0.95 J	**140**	< 5.0 U	< 1.0 U
	9/30/2011	1.7 J	2.3	< 2.0 U	< 2.0 U	7.1	< 2.0 U	**95**	< 2.0 U	0.62 J	**86**	< 2.0 U	< 4.0 U
	9/6/2012	2.7 J	< 5.0 U	< 5.0 U	< 5.0 U	3.4 J	< 5.0 U	**84**	< 5.0 U	< 5.0 U	**63**	< 5.0 U	< 1.0 U
	9/25/2013	2.5	3.5	< 1.0 U	< 1.0 U	5.7	< 1.0 U	**73**	< 1.0 U	0.29 J	**40**	0.30 J	< 2.0 U
	10/7/2014	< 1.0 U	7.1	< 1.0 U	< 1.0 U	5.1	< 1.0 U	**39**	< 1.0 U	< 1.0 U	**5.5**	1.8	< 2.9 U
	11/4/2015	< 1.0 U	4.0	< 1.0 U	< 1.0 U	5.6	< 1.0 U	**26**	< 1.0 U	< 1.0 U	4.0	1.7	< 2.0 U
	8/23/2016	< 1.0 U	2.1	< 1.0 U	< 1.0 U	5.1	< 1.0 U	**14**	< 1.0 U	< 1.0 U	4.1	< 1.0 U	< 2.0 U
	7/10/2019	< 1.0 U	7.4	< 1.0 U	< 1.0 U	7.4	< 1.0 U	2.2	< 1.0 U	0.20 J	0.39 J	1.8	< 2.0 U
GM-51	4/28/2006	0.9 J	< 1.0 U	< 1.0 U	< 1.0 U	0.32 J	< 1.0 U	**6.7**	< 1.0 U	< 1.0 U	4.9	< 1.0 U	< 2.0 U
	11/30/2006	0.76 J	< 1.0 U	< 1.0 U	< 1.0 U	0.26 J	< 1.0 U	**6.6**	< 1.0 U	< 1.0 U	5.0	< 1.0 U	< 2.0 U
	9/27/2007	0.61 J	0.23 J	< 1.0 U	< 1.0 U	1.0	< 1.0 U	**7.2**	0.29 J	< 1.0 U	3.9	< 1.0 U	< 2.0 U
	9/30/2008	0.6 J	0.78 J	< 1.0 U	< 1.0 U	2.0	< 1.0 U	**9.3**	< 1.0 U	0.70 J	**7.7**	< 1.0 U	< 2.0 U
	9/25/2013	1.9	1.8	< 1.0 U	< 1.0 U	2.8	< 1.0 U	**46**	< 1.0 U	0.30 J	**64**	< 1.0 U	< 2.0 U
	10/6/2014	0.70 J	1.7 J	< 2.0 U	< 2.0 U	5.0	< 2.0 U	**67**	< 2.0 U	< 2.0 U	**33**	< 2.0 U	< 4.0 U
	10/30/2015	< 2.0 U	2.8	< 2.0 U	< 2.0 U	6.5	< 2.0 U	**63**	< 2.0 U	< 2.0 U	**16**	< 2.0 U	< 4.0 U
	8/25/2016	1.2	2.5	< 1.0 U	< 1.0 U	6.4	< 1.0 U	**6.5**	< 1.0 U	< 1.0 U	**33**	< 1.0 U	< 2.0 U
	7/10/2019	< 1.0 U	1.9	< 1.0 U	< 1.0 U	6.1	< 1.0 U	**44**	< 1.0 U	0.22 J	5.0	< 1.0 U	< 2.0 U
GM-52	4/28/2006	2.0	0.94 J	< 2.0 U	< 2.0 U	1.9 J	< 2.0 U	**75**	< 2.0 U	0.67 J	**61**	< 2.0 U	< 4.0 U
	11/30/2006	1.3 J	0.93 J	< 2.0 U	< 2.0 U	2.7	< 2.0 U	**67**	< 2.0 U	0.76 J	**47**	< 2.0 U	< 4.0 U
	9/26/2007	1.3 J	1.5 J	< 2.5 U	< 2.5 U	18	< 2.5 U	**88**	< 2.5 U	1.0 J	**47**	< 2.5 U	< 5.0 U
	9/30/2008	1.9 J	3.0	< 2.5 U	< 2.5 U	14	< 2.5 U	**88**	< 2.5 U	< 2.5 U	**43**	< 2.5 U	< 5.0 U
	11/12/2009	1.1 J	1.1 J	< 2.5 U	< 2.5 U	1.5 J	< 2.5 U	**94**	< 2.5 U	0.83 J	**43**	< 2.5 U	< 5.0 U
	1/27/2010	1.0 J	1.0 J	< 4.0 U	< 4.0 U	1.6 J	< 4.0 U	**94**	< 4.0 U	0.99 J	**42**	< 4.0 U	< 8.0 U
	9/22/2010	0.92 J	0.94 J	< 3.3 U	< 3.3 U	1.8 J	< 3.3 U	**90**	< 3.3 U	0.74 J	**50**	< 3.3 U	< 6.7 U
	9/29/2011	< 4.0 U	1.9 J	< 4.0 U	< 4.0 U	4.2	< 4.0 U	**73**	< 4.0 U	< 4.0 U	**38**	< 4.0 U	< 8.0 U
	9/5/2012	< 4.0 U	4.1	< 4.0 U	< 4.0 U	7.9	< 4.0 U	**66**	< 4.0 U	< 4.0 U	**29**	< 4.0 U	< 8.0 U
	9/25/2013	0.47 J	1.2	< 1.0 U	< 1.0 U	3.1	< 1.0 U	**53**	< 1.0 U	< 1.0 U	**18**	< 1.0 U	< 2.0 U
	10/6/2014	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	**44**	< 2.0 U	< 2.0 U	**8.2**	< 2.0 U	< 4.0 U
	10/30/2015	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	**32**	< 2.0 U	< 2.0 U	**5.8**	< 2.0 U	< 4.0 U
	8/25/2016	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	0.28 J	< 1.0 U	**30**	< 1.0 U	< 1.0 U	< 1.0 UB	< 1.0 U	< 2.0 U
	7/10/2019	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	**15**	< 1.0 U	< 1.0 U	0.83 J	< 1.0 U	< 2.0 U

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RACER Trust Moraine Facilities
Moraine, Ohio

Well	Date	VOCs (ug/L)											
		1,1,1-TCA	1,1-DCA	1,1-DCE	Benzene	cis-1,2-DCE	Ethyl-benzene	PCE	Toluene	trans-1,2-DCE	TCE	Vinyl Chloride	Xylenes (total)
MCL		200		7	5	70	700	5	1000	100	5	2	10,000
GM-55	9/14/2006	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	**7.4**	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 2.0 U
	11/12/2009	< 1.0 U	< 1.0 U	< 1.0 U	0.46 J	< 1.0 U	< 1.0 U	**7.7**	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 2.0 U
	9/22/2010	< 1.0 U	< 1.0 U	< 1.0 U	0.23 J	< 1.0 U	< 1.0 U	**7.2**	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 2.0 U
	9/28/2011	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	**6.1**	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 2.0 U
	9/5/2012	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	4.6	0.26 J	< 1.0 U	< 1.0 U	< 1.0 U	< 2.0 U
	9/25/2013	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	4.6	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 2.0 U
	10/6/2014	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	3.3	0.34 J	< 1.0 U	< 1.0 U	< 1.0 U	< 2.0 U
	11/3/2015	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	2.5	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 2.0 U
	8/15/2016	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	2.0	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 2.0 U
GM-57	9/14/2006	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	0.21 J	1.9	0.48 J	< 1.0 U	< 1.0 U	< 1.0 U	< 2.0 U
	1/21/2008	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	1.9	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 2.0 U
GM-62[(1)]	9/14/2006	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	**15**	0.24 J	< 1.0 U	< 1.0 U	< 1.0 U	< 2.0 U
	4/8/2010	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	**20**	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 2.0 U
	10/6/2014	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	**12**	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 2.0 U
	11/3/2015	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	**13**	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 2.0 U
GM-63	9/14/2006	2.3 J	1.9 J	< 5.0 U	< 5.0 U	5.6	< 5.0 U	**160**	< 5.0 U	1.4 J	**120**	< 5.0 U	< 1.0 U
	12/1/2006	2.3 J	1.9 J	< 4.0 U	< 4.0 U	8.8	< 4.0 U	**140**	< 4.0 U	1.3 J	**100**	< 4.0 U	< 8.0 U
	9/25/2007	2.7 J	1.8 J	< 6.7 U	< 6.7 U	5.0 J	< 6.7 U	**130**	< 6.7 U	< 6.7 U	**120**	< 6.7 U	< 1.0 U
	10/1/2008	4.0 J	2.2 J	< 5.0 U	< 5.0 U	4.9 J	< 5.0 U	**140**	< 5.0 U	< 5.0 U	**92**	< 5.0 U	< 1.0 U
	1/28/2010	2.0 J	< 5.7 U	< 5.7 U	< 5.7 U	3.2 J	< 5.7 U	**150**	< 5.7 U	< 5.7 U	**140**	< 5.7 U	< 1.0 U
	9/6/2012	3.2 J	1.6 J	< 5.7 U	< 5.7 U	2.2 J	< 5.7 U	**89**	< 5.7 U	< 5.7 U	**58**	< 5.7 U	< 1.0 U
	9/25/2013	4.4	1.6	< 1.0 U	< 1.0 U	1.9	< 1.0 U	**81**	< 1.0 U	0.33 J	**48**	< 1.0 U	< 2.0 U
	10/7/2014	2.8	1.9	< 1.0 U	< 1.0 U	2.4	< 1.0 U	**53**	< 1.0 U	< 1.0 U	**20**	< 1.0 U	< 2.9 U
	11/4/2015	2.2	1.9	< 1.7 U	< 1.7 U	3.4	< 1.7 U	**46**	< 1.7 U	< 1.7 U	**19**	< 1.7 U	< 3.3 U
	8/24/2016	2.2	0.84 J	< 1.7 U	< 1.7 U	1.2 J	< 1.7 U	**38**	< 1.7 U	< 1.7 U	5.0	< 1.7 U	< 3.3 U
	7/10/2019	< 1.0 U	1.6	< 1.0 U	< 1.0 U	2.6	< 1.0 U	**12**	< 1.0 U	< 1.0 U	3.7	0.31 J	< 2.0 U
GM-64	9/14/2006	1.8 J	1.8 J	< 2.5 U	< 2.5 U	16	< 2.5 U	**77**	< 2.5 U	1.6 J	**34**	< 2.5 U	< 5.0 U
	12/1/2006	2.1 J	2.1 J	< 2.5 U	< 2.5 U	42	< 2.5 U	**85**	< 2.5 U	2 J	**35**	< 2.5 U	< 5.0 U
	9/25/2007	< 3.3 U	2.7 J	< 3.3 U	< 3.3 U	**74**	< 3.3 U	**11**	< 3.3 U	6.6	4.5	**18**	< 6.7 U
	10/1/2008	0.55 J	2.7	< 1.0 U	< 1.0 U	15	< 1.0 U	**31**	< 1.0 U	2.3	**14**	**2.3**	< 2.0 U
	9/26/2013	0.71 J	4.2	< 1.0 U	< 1.0 U	44	< 1.0 U	**41**	< 1.0 U	2.8	**31**	**5.8**	< 2.0 U
	7/10/2019	0.65 J	2.5	< 1.0 U	< 1.0 U	40	< 1.0 U	**15**	< 1.0 U	0.87 J	**31**	1.3	< 2.0 U

Table D-1
Groundwater VOC Analytical Results for the Upper Aquifer Wells from 1999 to 2019
RACER Trust Moraine Facilities
Moraine, Ohio

Well	Date	VOCs (ug/L)											
		1,1,1-TCA	1,1-DCA	1,1-DCE	Benzene	cis-1,2-DCE	Ethyl-benzene	PCE	Toluene	trans-1,2-DCE	TCE	Vinyl Chloride	Xylenes (total)
MCL		200		7	5	70	700	5	1000	100	5	2	10,000
GM-65S	5/2/2007	0.62 J	0.78 J	< 1.0 U	< 1.0 U	1.7	< 1.0 U	**11**	< 1.0 U	< 1.0 U	**8.0**	< 1.0 U	< 2.0 U
	1/21/2008	0.58 J	0.54 J	< 1.0 U	< 1.0 U	1.5	< 1.0 U	**13**	< 1.0 U	< 1.0 U	**7.9**	< 1.0 U	< 2.0 U
	10/6/2008	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	**8.7**	< 1.0 U	< 1.0 U	3.8	< 1.0 U	< 2.0 U
	11/12/2009	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 UJ	**11**	< 1.0 U	< 1.0 U	2.5	< 1.0 U	< 2.0 U
	1/27/2010	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	0.22 J	< 1.0 U	**13**	< 1.0 U	< 1.0 U	2.8	< 1.0 U	< 2.0 U
	9/22/2010	< 1.0 U	0.34 J	< 1.0 U	< 1.0 U	0.63 J	< 1.0 U	**9.9**	< 1.0 U	< 1.0 U	2.3	< 1.0 U	< 2.0 U
	9/28/2011	< 1.0 U	0.16 J	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	**7.8**	< 1.0 U	< 1.0 U	2.3	< 1.0 U	< 2.0 U
	9/5/2012	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	**6.5**	< 1.0 U	< 1.0 U	2.0	< 1.0 U	< 2.0 U
	9/25/2013	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	**5.6**	< 1.0 U	< 1.0 U	0.82 J	< 1.0 U	< 2.0 U
	10/6/2014	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	**5.4**	< 1.0 U	< 1.0 U	0.24 J	< 1.0 U	< 2.0 U
	11/5/2015	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	**3.8**	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 2.0 U
	8/17/2016	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	3.4	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 2.0 U
	9/14/2018	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	2.4	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 2.0 U
GM-77S	9/27/2007	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 2.0 U
	10/21/2010	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 2.0 U
GM-78	10/23/2007	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	**8.9**	0.23 J	< 1.0 U	< 1.0 U	< 1.0 U	< 2.0 U
	1/21/2008	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	**11**	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 2.0 U
	10/2/2008	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 UJ	< 1.0 U	< 1.0 U	**11**	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 2.0 U
	11/12/2009	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 UJ	**12**	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 2.0 U
	9/28/2010	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	**11**	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 2.0 U
	9/29/2011	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	4.3	0.18 J	< 1.0 U	< 1.0 U	< 1.0 U	< 2.0 U
	9/5/2012	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	**9.5**	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 2.0 U
	9/25/2013	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	**11**	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 2.0 U
	10/6/2014	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	**9.5**	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 2.0 U
	11/3/2015	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	**7.1**	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 2.0 U
	8/25/2016	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	**6.2**	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 2.0 U
GM-79	10/23/2007	0.66 J	0.24 J	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	1.6	< 1.0 U	< 2.0 U
	10/2/2008	0.65 J	< 1.0 U	< 1.0 U	< 1.0 UJ	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	1.8	< 1.0 U	< 2.0 U
	11/12/2009	0.72 J	0.31 J	< 1.0 U	0.48 J	0.28 J	< 1.0 UJ	< 1.0 U	< 1.0 U	< 1.0 U	2.1	< 1.0 U	< 2.0 U
	9/22/2010	0.51 J	0.23 J	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	1.6	< 1.0 U	< 2.0 U
	9/28/2011	< 1.0 U	0.22 J	< 1.0 U	< 1.0 U	0.19 J	< 1.0 U	0.34 J	< 1.0 U	< 1.0 U	1.3	< 1.0 U	< 2.0 U
	9/5/2012	0.72 J	0.94 J	< 1.0 U	< 1.0 U	1.9	< 1.0 U	< 1.0 U	< 1.0 U	0.29 J	2.2	< 1.0 U	< 2.0 U
	9/25/2013	0.88 J	1.1	< 1.0 U	< 1.0 U	1.4	< 1.0 U	0.31 J	< 1.0 U	0.42 J	3.9	< 1.0 U	< 2.0 U
	10/6/2014	1.0	3.2	< 1.0 U	< 1.0 U	8.4	< 1.0 U	1.0	< 1.0 U	0.43 J	**23**	< 1.0 U	< 2.0 U
	11/4/2015	0.71 J	2.2	< 1.4 U	< 1.4 U	7.4	< 1.4 U	0.97 J	< 1.4 U	< 1.4 U	**31**	< 1.4 U	< 2.9 U
	10/27/2016	0.70 J	2.6	< 1.0 U	< 1.0 U	7.4	< 1.0 U	2.1	< 1.0 U	< 1.0 U	**36**	< 1.0 U	< 2.0 U
	8/1/2017	0.60 J	2.3	< 1.0 U	< 1.0 U	5.4	< 1.0 U	4.3	< 1.0 U	< 1.0 U	**34**	< 1.0 U	< 2.0 U
	7/23/2018	0.39 J	1.7	< 1.0 U	< 1.0 U	4.5	< 1.0 U	**13**	< 1.0 U	< 1.0 U	**21**	0.27 J	< 2.0 U

Table D-1
Groundwater VOC Analytical Results for the Upper Aquifer Wells from 1999 to 2019
RACER Trust Moraine Facilities
Moraine, Ohio

Well	Date	VOCs (ug/L)											
		1,1,1-TCA	1,1-DCA	1,1-DCE	Benzene	cis-1,2-DCE	Ethyl-benzene	PCE	Toluene	trans-1,2-DCE	TCE	Vinyl Chloride	Xylenes (total)
MCL		200		7	5	70	700	5	1000	100	5	2	10,000
GM-80	10/23/2007	< 1.0 U	0.38 J	< 1.0 U	< 1.0 U	1.5	< 1.0 U	0.68 J	< 1.0 U	0.21 J	4.0	< 1.0 U	< 2.0 U
	9/22/2008	< 1.0 U	0.39 J	< 1.0 U	< 1.0 U	3.6	< 1.0 U	0.93 J	< 1.0 U	0.19 J	**5.4**	< 1.0 U	< 2.0 U
	11/12/2009	0.24 J	0.55 J	< 1.0 U	< 1.0 U	3.2	< 1.0 U	1.6	< 1.0 U	0.25 J	**9.8**	< 1.0 U	< 2.0 U
	4/9/2010	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	0.85 J	< 1.0 U	1.9	< 1.0 U	< 1.0 U	**6.6**	< 1.0 U	< 2.0 U
	9/21/2010	< 1.0 U	0.30 J	< 1.0 U	< 1.0 U	1.3	< 1.0 U	2.6	< 1.0 U	< 1.0 U	**6**	< 1.0 U	< 2.0 U
	9/28/2011	< 1.0 U	0.47 J	< 1.0 U	< 1.0 U	2.7	< 1.0 U	4.1	< 1.0 U	0.24 J	**5.9**	< 1.0 U	< 2.0 U
	9/5/2012	0.43 J	1.7	< 1.0 U	< 1.0 U	8.3	< 1.0 U	**5.2**	< 1.0 U	0.30 J	**13**	< 1.0 U	< 2.0 U
	9/25/2013	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	**6.7**	< 1.0 U	< 1.0 U	4.6	< 1.0 U	< 2.0 U
	10/6/2014	0.50 J	0.66 J	< 1.0 U	< 1.0 U	2.5	< 1.0 U	**3.5**	< 1.0 U	< 1.0 U	**12**	< 1.0 U	< 2.0 U
	11/4/2015	< 1.0 U	0.96 J	< 1.0 U	< 1.0 U	2.9	< 1.0 U	**18**	< 1.0 U	< 1.0 U	**15**	< 1.0 U	< 2.0 U
	10/27/2016	0.54 J	0.60 J	< 1.0 U	< 1.0 U	3.6	< 1.0 U	**20**	< 1.0 U	< 1.0 U	**12**	< 1.0 U	< 2.0 U
	8/1/2017	0.32 J	0.38 J	< 1.0 U	< 1.0 U	1.7	< 1.0 U	**20**	< 1.0 U	< 1.0 U	**7.5**	< 1.0 U	< 2.0 U
	7/23/2018	< 1.0 U	0.54 J	< 1.0 U	< 1.0 U	1.5	< 1.0 U	**18**	< 1.0 U	< 1.0 U	**5.3**	< 1.0 U	< 2.0 U
	3/27/2019	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	0.76 J	< 1.0 U	**15**	< 1.0 U	< 1.0 U	3.6 B	< 1.0 U	< 2.0 U
GM-81	10/23/2007	0.22 J	0.93 J	< 1.0 U	< 1.0 U	0.98 J	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	0.61 J	< 1.0 U	< 2.0 U
	4/9/2010	0.23 J	0.92 J	< 1.0 U	< 1.0 U	1.5	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	1.2	< 1.0 U	< 2.0 U
	7/31/2017	0.26 J	1.1	< 1.0 U	< 1.0 U	1.5	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	2	< 1.0 U	< 2.0 U
	7/23/2018	< 1.0 U	1.1	< 1.0 U	< 1.0 U	1.6	< 1.0 U	< 1.0 U	< 1.0 U	0.19 J	1.5	< 1.0 U	< 2.0 U
MW-5	7/31/2017	< 1.0 U	0.89 J	< 1.0 U	< 1.0 U	1.1 J	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	1.7 J	< 1.0 U	< 2.0 U
	7/23/2018	< 1.0 U	0.64 J	< 1.0 U	< 1.0 U	0.92 J	< 1.0 U	< 1.0 U	< 1.0 U	<1.0 U	1.6	< 1.0 U	< 2.0 U
RMW-95	8/1/2017	< 1.0 U	0.27 J	< 1.0 U	< 1.0 U	1.4	< 1.0 U	0.48 J	< 1.0 U	< 1.0 U	**5.1**	< 1.0 U	< 2.0 U
	7/23/2018	< 1.0 U	0.57 J	< 1.0 U	0.13 J	0.38 J	0.13 J	3.4	0.33 J	< 1.0 U	1.6	< 1.0 U	0.19 J
	3/27/2019	0.43 J	0.35 J	< 1.0 U	< 1.0 U	0.24 J	< 1.0 U	2.6	< 1.0 U	< 1.0 U	0.63 JB	< 1.0 U	< 2.0 U
RMW-96	8/2/2017	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	0.95 J	0.31 J	< 1.0 U	< 1.0 U	< 1.0 U	< 2.0 U
	7/23/2018	< 1.0 U	0.28 J	< 1.0 U	< 1.0 U	0.80 J	< 1.0 U	**7.0**	< 1.0 U	< 1.0 U	2.1	< 1.0 U	< 2.0 U
	3/27/2019	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	0.43 J	< 1.0 U	2.0	< 1.0 U	< 1.0 U	0.44 JB	< 1.0 U	< 2.0 U
RMW-97	8/1/2017	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	0.62 J	< 1.0 U	3.2	< 1.0 U	< 1.0 U	0.63 J	< 1.0 U	< 1.0 U
	7/23/2018	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	0.93 J	< 1.0 U	4.7	< 1.0 U	< 1.0 U	1.1	< 1.0 U	< 2.0 U
	3/27/2019	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	2.8	< 1.0 U	< 1.0 U	0.26 JB	< 1.0 U	< 2.0 U

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RACER Trust Moraine Facilities
Moraine, Ohio

Well	Date	VOCs (ug/L)											
		1,1,1-TCA	1,1-DCA	1,1-DCE	Benzene	cis-1,2-DCE	Ethyl-benzene	PCE	Toluene	trans-1,2-DCE	TCE	Vinyl Chloride	Xylenes (total)
MCL		200		7	5	70	700	5	1000	100	5	2	10,000
RMW-98	7/10/2019	1.2	1.6	< 1.0 U	< 1.0 U	6.8	< 1.0 U	**35**	< 1.0 U	0.29 J	**8.5**	0.27 J	< 2.0 U
RMW-99	7/10/2019	0.77 J	2.1	< 1.0 U	< 1.0 U	2.9	< 1.0 U	**35**	< 1.0 U	< 1.0 U	2.3	0.26 J	< 2.0 U
RMW-100	7/8/2019	< 1.0 U	0.82 J	< 1.0 U	< 1.0 U	1.8	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	0.50 J	< 2.0 U
RMW-101	7/8/2019	< 1.0 U	1.3	< 1.0 U	0.13 J	6.7	< 1.0 U	0.49 J	< 1.0 U	0.30 J	1.9	0.61 J	< 2.0 U
RMW-102	7/8/2019	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	**14**	< 1.0 U	< 1.0 U	0.39 J	< 1.0 U	< 2.0 U
TW-2	9/26/2000	4.5	27.8	< 1.0 U	< 1.0 U	23	10	5.0	< 1.0 U	2.9	**43**	**5.9**	3.2
	11/9/2001	3.9	20	< 2.0 U	< 2.0 U	8.8	0.38 J	**8.5**	< 2.0 U	2.4	**48**	**2.7**	< 2.0 U
	9/20/2002	2.2	9.0	< 2.0 U	< 2.0 U	26	< 2.0 U	**5.9**	< 2.0 U	1.4	**70**	**2.5**	< 2.0 U
	10/2/2003	0.66 J	5.7	< 1.0 U	1.5	8.3	0.86 J	4.7	< 1.0 U	0.59	**24**	1.4	< 1.0 U
	9/14/2004	< 1.0 U	22	< 1.0 U	2.9	5.5	< 1.0 U	< 1.0 U	< 1.0 U	2.0	1.5	**2.5**	< 1.0 U
	10/20/2005	< 1.0 U	12	< 1.0 U	2.5	5.3	12	< 1.0 U	3.4	1.4	< 1.0 U	**4.4**	5.0
	9/19/2006	0.55 J	3.4	< 1.0 U	< 1.0 U	11	< 1.0 U	**7.0**	< 1.0 U	0.38 J	**32**	0.27 J	< 2.0 U
	9/18/2007	< 1.0 U	1.7	< 1.0 U	0.81 J	7.9	< 1.0 U	1.9	< 1.0 U	0.25 J	**24**	0.97 J	< 2.0 U
	9/24/2008	< 1.0 U	< 1.0 U	< 1.0 U	1.4	< 5.2 U	0.76 J	1.4	< 1.0 U	0.36 J	**7.5**	1.0	< 2.0 U
	11/11/2009	< 2.5 U	1.1 J	< 2.5 U	< 2.5 U	1.6 J	< 2.5 U	< 2.5 U	< 2.5 U	< 2.5 U	1.1 J	< 2.5 U	< 5.0 U
	9/28/2010	< 1.0 U	2.0	< 1.0 U	1.2	2.1	< 1.0 U	0.52 J	< 1.0 U	0.30 J	1.6	0.71 J	< 2.0 U
	9/28/2011	< 1.0 U	1.8	< 1.0 U	1.2	5.7	0.45 J	1.2	< 1.0 U	0.25 J	**5.9**	1.1	< 2.0 U
	9/6/2012	< 1.0 U	1.3	< 1.0 U	0.51 J	3.6	< 1.0 U	< 1.0 U	0.18 J	0.23 J	0.26 J	0.56 J	< 2.0 U
	9/25/2013	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 2.0 U
	10/9/2014	< 1.0 U	0.48 J	< 1.0 U	< 1.0 U	0.56 J	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 UB	0.64 J	< 2.0 U
	11/4/2015	< 1.0 U	0.31 J	< 1.0 U	< 1.0 U	0.27 J	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	0.29 J	< 2.0 U
	8/17/2016	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 2.0 U
WSU-22	3/1/2006	3.1	1.7	< 1.0 U	< 1.0 U	4.3	< 1.0 U	**110**	< 1.0 U	1.2 J	**88**	< 1.0 U	< 3.3 U

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Moraine, Ohio

Well	Date	VOCs (ug/L)											
		1,1,1-TCA	1,1-DCA	1,1-DCE	Benzene	cis-1,2-DCE	Ethyl-benzene	PCE	Toluene	trans-1,2-DCE	TCE	Vinyl Chloride	Xylenes (total)
MCL		200		7	5	70	700	5	1000	100	5	2	10,000
WSU-23	3/1/2006	2.5	0.97 J	< 1.0 U	< 1.0 U	0.44 J	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	**7.1**	< 1.0 U	< 2.0 U
	11/30/2006	2.1	0.73 J	0.2 J	< 1.0 U	0.46 J	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	**6.1**	< 1.0 U	< 2.0 U
	7/10/2019	1.7	0.86 J	< 1.0 U	< 1.0 U	0.77 J	< 1.0 U	**28**	< 1.0 U	< 1.0 U	3.7	< 1.0 U	< 2.0 U
WSU-24	9/23/1999	2.4	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	1.9	< 1.0 U	< 1.0 U	**17**	< 1.0 U	< 1.0 U
	9/26/2000	2.1	< 1.0 U	< 1.0 U	< 1.0 U	2.7	< 1.0 U	1.2.	< 1.0 U	< 1.0 U	**17**	< 1.0 U	< 1.0 U
	11/9/2001	2.4	0.81 J	< 1.0 U	< 1.0 U	4.0	< 1.0 U	1.6	< 1.0 U	< 0.50 U	**18**	< 1.0 U	< 1.0 U
	9/24/2002	1.4	< 1.0 U	< 1.0 U	< 1.0 U	< 0.50 U	< 1.0 U	1.2	< 1.0 U	< 0.50 U	**13**	< 1.0 U	< 1.0 U
	9/22/2003	0.67 J	< 1.0 U	< 1.0 U	< 1.0 U	< 0.50 U	< 1.0 U	1.0	< 1.0 U	< 0.50 U	**7.9**	< 1.0 U	< 1.0 U
	9/16/2004	0.58 J	< 1.0 U	< 1.0 U	< 1.0 U	< 0.50 U	< 1.0 U	1.3	< 1.0 U	< 0.50 U	**8.0**	< 1.0 U	< 1.0 U
	10/20/2005	1.5	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	1.2	< 1.0 U	< 1.0 U	**11**	< 1.0 U	< 2.0 U
	9/26/2006	0.65 J	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	0.81 J	< 1.0 U	< 1.0 U	**10**	< 1.0 U	< 2.0 U
	9/19/2007	0.66 J	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	0.89 J	< 1.0 U	< 1.0 U	**7.9**	< 1.0 U	< 2.0 U
	9/25/2008	0.62 J	0.85 J	< 1.0 U	< 1.0 U	2.4 J	< 1.0 U	1.7	< 1.0 U	0.35 J	**12 J**	< 1.0 U	< 2.0 U
	9/25/2013	0.23 J	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	**13**	< 1.0 U	< 1.0 U	2.5	< 1.0 U	< 2.0 U
	12/4/2014	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	**7.2**	< 1.0 U	< 1.0 U	2.0	< 1.0 U	< 2.0 U
	11/3/2015	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	**8.4**	< 1.0 U	< 1.0 U	1.3	< 1.0 U	< 2.0 U

NOTES:
< - Constituent not detected above laboratory reporting limit shown.
(1) - Well abandoned.
1,1,1-TCA - 1,1,1-Trichloroethane.
1,1-DCA - 1,1-Dichloroethane.
1,1-DCE - 1,1-Dichloroethene.
B - Compound was found in the blank and sample.
BOLD - Result above MCL.
cis-1,2-DCE - cis-1,1-Dichloroethene.
F2 - MS/MSD Relative Percent Difference exceeds control limits.
J - Value is estimated.
K - The compound was positively identified; however, the associated numerical value is an estimated concentration only and the reported value may be biased high.
MCL - Maximum Contaminant Level.
PCE - Tetrachloroethene.
trans-1,2-DCE - trans-1,2-Dichloroethene.
TCE - Trichloroethene.
U - Constituent not detected above laboratory reporting limit shown.
UB - Analyte considered non-detect at listed value due to associated blank contamination.
ug/L - Micrograms per Liter.
VOCs - Volatile Organic Compounds.

Table D-2
Groundwater VOC Analytical Results for the Lower Aquifer Wells from 1999-2019
RACER Trust Moraine Facilities
Moraine, Ohio

Well	Date	VOCs (ug/L)											
		1,1,1-TCA	1,1-DCA	1,1-DCE	Benzene	cis-1,2-DCE	Ethyl-benzene	PCE	Toluene	trans-1,2-DCE	TCE	Vinyl Chloride	Xylenes
MCL		200		7	5	70	700	5	1000	100	5	2	10,000
Upgradient of the Site													
HR-12	9/14/1999	< 1.0 UJ	2.7	< 1.0 U	1.2	1.8	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	1.7	< 1.0 U
	9/28/2000	< 1.0 U	2.2	< 1.0 U	< 1.0 U	2.0	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	**2.5**	< 1.0 U
	11/14/2001	< 1.0 U	3.6	< 1.0 U	< 1.0 U	2.7	< 1.0 U	< 1.0 U	< 1.0 U	0.23	< 1.0 U	**3.8**	< 1.0 U
	9/26/2002	< 1.0 U	2.4	< 1.0 U	< 1.0 U	2.1	< 1.0 U	< 1.0 U	< 1.0 U	< 0.50 U	< 1.0 U	1.7	< 1.0 U
	9/18/2003	< 1.0 U	1.7	< 1.0 U	< 1.0 U	1.4	< 1.0 U	< 1.0 U	< 1.0 U	< 0.50 U	< 1.0 U	1.6	< 1.0 U
	9/21/2004	< 1.0 U	1.8	< 1.0 U	< 1.0 U	1.2	< 1.0 U	< 1.0 U	< 1.0 U	< 0.50 U	< 1.0 U	1.1	< 1.0 U
	10/24/2005	< 1.0 U	2.1	< 1.0 U	< 1.0 U	1.5	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	0.36 J	< 2.0 U
	9/26/2006	< 1.0 U	2.1	< 1.0 U	< 1.0 U	1.3	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 2.0 U
	9/19/2007	< 1.0 U	2.2	< 1.0 U	< 1.0 U	1.3	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 2.0 U
	9/25/2008	0.39 J	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	1.3	< 1.0 U	< 1.0 U	**5.1**	< 1.0 U	< 2.0 U
	11/13/2009	< 1.0 U	2	< 1.0 U	< 1.0 U	1.1	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 2.0 U
	9/28/2010	< 1.0 U	2.1	< 1.0 U	< 1.0 U	1.2	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 2.0 U
	9/28/2011	< 1.0 U	2.8	< 1.0 U	< 1.0 U	1.6	< 1.0 U	< 1.0 U	< 1.0 U	0.24 J	< 1.0 U	< 1.0 U	< 2.0 U
	9/7/2012	< 1.0 U	2.1	< 1.0 U	< 1.0 U	0.31 J	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 2.0 U
	9/26/2013	< 1.0 U	1.8	< 1.0 U	< 1.0 U	0.24 J	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 2.0 U
	10/8/2014	< 1.0 U	3.4	< 1.0 U	< 1.0 U	1.9	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 UB	< 1.0 U	< 2.0 U
	12/8/2015	< 1.0 U	2.4	< 1.0 U	< 1.0 U	1.5	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	0.31 J	< 2.0 U
	8/16/2016	< 1.0 U	3.1	< 1.0 U	< 1.0 U	1.8	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 2.0 U
RMW-88	9/26/2012	< 1.4 U	17	< 1.4 U	< 1.4 U	43	< 1.4 U	< 1.4 U	0.21 J	1.5	< 1.4 U	1.1 J	< 2.9 U
	9/27/2013	< 1.0 U	35	< 1.0 U	< 1.0 U	**75**	< 1.0 U	< 1.0 U	< 1.0 U	4.5	< 1.0 U	2.0	< 2.0 U
	10/8/2014	< 2.5 U	32	< 2.5 U	< 2.5 U	**78**	< 2.5 U	< 2.5 U	< 2.5 U	4.3	< 2.5 U	1.2 J	< 5.0 U
	8/26/2015	< 1.0 U	30	< 1.0 U	< 1.0 U	60	< 1.0 U	< 1.0 U	< 1.0 U	3.8	< 1.0 U	3.3	< 2.0 U
	10/30/2015	< 2.0 U	27	< 2.0 U	< 2.0 U	61	< 2.0 U	< 2.0 U	< 2.0 U	3.2	< 2.0 U	1.5 J	< 4.0 U
	8/26/2016	< 2.0 U	24	< 2.0 U	< 2.0 U	55	< 2.0 U	< 2.0 U	< 2.0 U	3.2	< 2.0 U	< 2.0 U	< 4.0 U
On-Site													
31	9/29/2000	< 1.0 U	7.4	< 1.0 U	< 1.0 U	8.4	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	**12.9**	**4.4**	< 1.0 U
	11/15/2001	< 1.0 U	3.1	< 1.0 U	< 1.0 U	2.4	< 1.0 U	< 1.0 U	< 1.0 U	< 0.50 U	**5.1**	**2.5**	< 1.0 U
39	9/27/2002	< 1.0 U	1.6	< 1.0 U	< 1.0 U	1.3	< 1.0 U	< 1.0 U	< 1.0 U	< 0.50 U	3.8	0.51J	< 1.0 U
	9/24/2003	< 1.0 U	0.58 J	< 1.0 U	< 1.0 U	0.71	< 1.0 U	< 1.0 U	< 1.0 U	< 0.50 U	0.89 J	< 1.0 U	< 1.0 U
GM-7R	9/28/1999	4.2	< 1.0 U	< 1.0 U	< 1.0 U	2.1	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	**76.1**	< 1.0 U	< 1.0 U
	8/25/2015	< 1.0 U	0.86 J	< 1.0 U	< 1.0 U	1.7	< 1.0 U	**53**	< 1.0 U	0.47 J	**23**	0.60 J	< 2.0 U

Table D-2
Groundwater VOC Analytical Results for the Lower Aquifer Wells from 1999-2019
RACER Trust Moraine Facilities
Moraine, Ohio

Well	Date	VOCs (ug/L)											
		1,1,1-TCA	1,1-DCA	1,1-DCE	Benzene	cis-1,2-DCE	Ethyl-benzene	PCE	Toluene	trans-1,2-DCE	TCE	Vinyl Chloride	Xylenes
MCL		200		7	5	70	700	5	1000	100	5	2	10,000
GM-19D	9/28/1999	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	1.2	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	**13.5**	1.5	< 1.0 U
	10/2/2000	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	3.5	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	2.9	**15.7**	< 1.0 U
	11/14/2001	0.18 J	< 1.0 U	< 1.0 U	< 1.0 U	0.92	< 1.0 U	< 1.0 U	0.38J	< 0.50 U	3.7	**13**	< 1.0 U
	9/26/2002	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	0.81	< 1.0 U	< 1.0 U	< 1.0 U	< 0.50 U	3.1	0.36 J	< 1.0 U
	9/25/2003	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	1.8	< 1.0 U	< 1.0 U	< 1.0 U	< 0.50 U	0.24 J	**17**	< 1.0 U
	9/20/2004	0.31 J	< 1.0 U	< 1.0 U	< 1.0 U	2	< 1.0 U	< 1.0 U	< 1.0 U	< 0.50 U	3.5	**18**	< 1.0 U
	10/25/2005	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	2.7	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	1.2	**15**	< 2.0 U
	9/26/2006	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	2	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	1.4	**18**	< 2.0 U
	9/17/2007	0.25 J	< 1.0 U	< 1.0 U	< 1.0 U	1.4	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	3.2	**16**	< 2.0 U
	9/23/2008	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	2.4	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	**9.8**	< 2.0 U
	11/11/2009	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	2.1	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	1.7	**14**	< 2.0 U
	9/27/2010	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	2.4	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	0.98 J	**9.9**	< 2.0 U
	9/29/2011	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	1.7	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	1.8	**8.6**	< 2.0 U
	9/6/2012	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	3.5	< 1.0 U	< 1.0 U	0.82 J	< 1.0 U	**7.4**	**2.4**	0.32 J
	9/26/2013	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	2.7	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	1.0	**7.8**	< 2.0 U
	10/7/2014	< 1.0 U	0.27 J	< 1.0 U	< 1.0 U	5.8	< 1.0 U	0.36 J	< 1.0 U	< 1.0 U	5.0	**4.1**	< 2.0 U
	11/4/2015	< 2.0 U	3	< 2.0 U	< 2.0 U	39	< 2.0 U	11	< 2.0 U	1.0 J	**69**	**1.0 J**	< 4.0 U
	8/16/2016	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	2.4	< 1.0 U	0.62 J	< 1.0 U	< 1.0 U	4.9	**6.2**	< 2.0 U
GM-39	12/10/2003	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 0.50 U	< 1.0 U	< 1.0 U	0.18 J	< 0.50 U	< 1.0 U	1.3	< 1.0 U
	9/20/2004	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 0.50 U	< 1.0 U	< 1.0 U	< 1.0 U	< 0.50 U	< 1.0 U	1.8	< 1.0 U
	10/24/2005	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	0.77 J	< 2.0 U
	9/27/2006	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	1.7	< 2.0 U
	9/26/2007	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	19 J	< 1.0 U	< 1.0 U	< 1.0 U	0.23 J	< 1.0 U	1.6	< 2.0 U
	10/1/2008	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	0.67 J	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	**3.2**	< 2.0 U
	9/27/2013	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	0.68 J	< 1.0 U	< 1.0 U	0.63 J	1.5	< 2.0 U
GM-40	12/10/2003	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 0.50 U	< 1.0 U	< 1.0 U	< 1.0 U	< 0.50 U	< 1.0 U	**3.1**	< 1.0 U
	9/20/2004	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 0.50 U	< 1.0 U	< 1.0 U	< 1.0 U	< 0.50 U	< 1.0 U	**3.2**	< 1.0 U
	10/25/2005	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	**2.9**	< 2.0 U
	9/26/2006	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	**3.9**	< 2.0 U
	9/25/2007	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	**4.0**	< 2.0 U
	9/30/2008	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	**3.6**	< 2.0 U

Table D-2
Groundwater VOC Analytical Results for the Lower Aquifer Wells from 1999-2019
RACER Trust Moraine Facilities
Moraine, Ohio

Well	Date	VOCs (ug/L)											
		1,1,1-TCA	1,1-DCA	1,1-DCE	Benzene	cis-1,2-DCE	Ethyl-benzene	PCE	Toluene	trans-1,2-DCE	TCE	Vinyl Chloride	Xylenes
MCL		200		7	5	70	700	5	1000	100	5	2	10,000
GM-41	12/10/2003	< 11 U	< 11 U	< 11 U	< 1.0 U	10	< 11 U	< 11 U	< 11 U	< 5.6 U	**320**	< 11 U	< 11 U
	9/21/2004	< 6.2 U	< 6.2 U	< 6.2 U	< 6.2 U	24	< 6.2 U	< 6.2 U	< 6.2 U	< 3.1 U	**180**	< 6.2 U	< 6.2 U
	10/24/2005	< 10 U	< 10 U	< 10 U	< 10 U	16	< 10 U	< 10 U	< 10 U	< 10 U	**250**	< 10 U	< 20 U
	9/18/2006	< 4.0 U	< 4.0 U	< 4.0 U	< 4.0 U	11	< 4.0 U	< 4.0 U	< 4.0 U	< 4.0 U	**210**	< 4.0 U	< 8.0 U
	5/3/2007	< 6.7 U	< 6.7 U	< 6.7 U	< 6.7 U	15	< 6.7 U	< 6.7 U	< 6.7 U	< 6.7 U	**170**	**2.4 J**	< 13 U
	9/20/2007	< 6.7 U	< 6.7 U	< 6.7 U	< 6.7 U	17	< 6.7 U	< 6.7 U	< 6.7 U	1.4 J	**230**	1.9 J	< 13 U
	9/26/2008	< 7.1 U	< 7.1 U	< 7.1 U	< 7.1 U	11	< 7.1 U	< 7.1 U	< 7.1 U	< 7.1 U	**180**	< 7.1 U	< 14 U
	9/27/2013	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	12	< 1.0 U	< 1.0 U	< 1.0 U	0.89 J	**79**	1.9	< 2.0 U
GM-42	12/9/2003	< 1.0 U	0.46 J	< 1.0 U	< 1.0 U	11	< 1.0 U	0.27 J	< 1.0 U	0.34 J	0.37 J	1.0	< 1.0 U
	9/20/2004	< 1.0 U	0.70 J	0.25 J	< 1.0 U	16	< 1.0 U	< 1.0 U	< 1.0 U	0.44 J	0.43 J	0.92 J	< 1.0 U
	10/25/2005	< 1.0 U	0.64 J	0.21 J	< 1.0 U	17	< 1.0 U	0.19 J	< 1.0 U	0.59 J	0.85 J	0.56 J	< 2.0 U
	9/26/2006	< 1.0 U	0.50 J	< 1.0 U	< 1.0 U	14	< 1.0 U	< 1.0 U	< 1.0 U	0.44 J	0.64 J	0.45 J	< 2.0 U
	9/25/2007	< 1.0 U	0.67 J	< 1.0 U	< 1.0 U	18	< 1.0 U	< 1.0 U	0.18 J	0.69 J	2.2	0.44 J	< 2.0 U
	9/30/2008	< 1.0 U	0.66 J	0.53 J	< 1.0 U	20	< 1.0 U	< 1.0 U	< 1.0 U	0.89 J	**9.9**	0.31 J	< 2.0 U
	9/6/2012	< 1.0 U	0.41 J	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	0.25 J	< 1.0 U	**6.4**	< 2.0 U
GM-54	9/14/2006	< 6.7 U	< 6.7 U	< 6.7 U	< 6.7 U	< 6.7 U	< 6.7 U	**180**	< 6.7 U	< 6.7 U	3.2 J	< 6.7 U	< 13 U
	5/2/2007	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U	**160**	< 5.0 U	< 5.0 U	2.9 J	< 5.0 U	< 10 U
	9/20/2007	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U	**150**	< 5.0 U	< 5.0 U	2.4 J	< 5.0 U	< 10 U
	9/30/2008	< 5.7 U	< 5.7 U	< 5.7 U	< 5.7 U	< 5.7 U	< 5.7 U	**190**	< 5.7 U	< 5.7 U	2.5 J	< 5.7 U	< 11 U
	11/13/2009	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U	**120**	< 5.0 U	< 5.0 U	2.9 J	< 5.0 U	< 10 U
	1/28/2010	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U	**120**	< 5.0 U	< 5.0 U	2.4 J	< 5.0 U	< 10 U
	9/23/2010	< 2.5 U	< 2.5 U	< 2.5 U	< 2.5 U	< 2.5 U	< 2.5 U	**92**	< 2.5 U	< 2.5 U	2.2 J	< 2.5 U	< 5.0 U
	9/29/2011	< 4.0 U	< 4.0 U	< 4.0 U	< 4.0 U	< 4.0 U	< 4.0 U	**83**	< 4.0 U	< 4.0 U	2.6 J	< 4.0 U	< 8.0 U
	9/7/2012	< 4.0 U	< 4.0 U	< 4.0 U	< 4.0 U	< 4.0 U	< 4.0 U	**64**	< 4.0 U	< 4.0 U	2.8 J	< 4.0 U	< 8.0 U
	9/26/2013	< 1.0 U	0.31 J	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	**69**	< 1.0 U	< 1.0 U	2.7	< 1.0 U	< 2.0 U
	10/8/2014	< 1.7 U	< 1.7 U	< 1.7 U	< 1.7 U	< 1.7 U	< 1.7 U	**66**	< 1.7 U	< 1.7 U	< 1.7 UB	< 1.7 U	< 3.3 U
	11/3/2015	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	**62**	< 2.0 U	< 2.0 U	1.3 J	< 2.0 U	< 4.0 U
	8/18/2016	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	**61**	< 1.0 U	< 1.0 U	1.6	< 1.0 U	< 2.0 U
GM-58	9/14/2006	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	0.73 J	< 1.0 U	4.4	0.4 J	< 1.0 U	0.72 J	< 1.0 U	< 2.0 U
	11/30/2006	< 3.3 U	< 3.3 U	< 3.3 U	< 3.3 U	< 3.3 U	< 3.3 U	**85**	< 3.3 U	< 3.3 U	< 3.3 U	< 3.3 U	< 6.7 U
	5/3/2007	< 2.9 U	< 2.9 U	< 2.9 U	< 2.9 U	< 2.9 U	< 2.9 U	**82**	< 2.9 U	< 2.9 U	< 2.9 U	< 2.9 U	< 5.7 U
	9/20/2007	< 3.3 U	< 3.3 U	< 3.3 U	< 3.3 U	< 3.3 U	< 3.3 U	**69**	< 3.3 U	< 3.3 U	< 3.3 U	< 3.3 U	< 6.7 U
	9/26/2008	< 2.5 U	< 2.5 U	< 2.5 U	< 2.5 U	< 2.5 U	< 2.5 U	**80**	< 2.5 U	< 2.5 U	< 2.5 U	< 2.5 U	< 5.0 U
	9/27/2013	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	**34**	< 1.0 U	< 1.0 U	0.41 J	< 1.0 U	< 2.0 U

Table D-2
Groundwater VOC Analytical Results for the Lower Aquifer Wells from 1999-2019
RACER Trust Moraine Facilities
Moraine, Ohio

Well	Date	VOCs (ug/L)											
		1,1,1-TCA	1,1-DCA	1,1-DCE	Benzene	cis-1,2-DCE	Ethyl-benzene	PCE	Toluene	trans-1,2-DCE	TCE	Vinyl Chloride	Xylenes
MCL		200		7	5	70	700	5	1000	100	5	2	10,000
GM-61	9/15/2006	0.5.0 J	2.2	< 1.7 U	< 1.7 U	2.6	< 1.7 U	**20**	0.44 J	< 1.7 U	**36**	< 1.7 U	< 3.3 U
	9/26/2007	0.59 J	1.6 J	< 1.7 U	< 1.7 U	3.9	< 1.7 U	**28**	< 1.7 U	< 1.7 U	**56**	< 1.7 U	< 3.3 U
	10/1/2008	< 1.0 U	0.94 J	0.19 J	< 1.0 U	20	< 1.0 U	**13**	< 1.0 U	0.92 J	**23**	0.75 J	< 2.0 U
	9/26/2013	< 1.0 U	1.3	< 1.0 U	< 1.0 U	17	< 1.0 U	**7.2**	< 1.0 U	1.1	**5.2**	1.2	< 2.0 U
	8/26/2015	< 1.0 U	3.3	< 1.0 U	< 1.0 U	25	< 1.0 U	**32**	< 1.0 U	1.5	**12**	0.45 J	< 2.0 U
GM-67D	5/3/2007	0.59 J	3.0	0.36 J	< 1.7 U	23	< 1.7 U	**54**	< 1.7 U	0.83 J	**45**	< 1.7 U	< 3.3 U
	10/10/2014	1.2 J	3.7	< 3.3 U	< 3.3 U	**120.0**	< 3.3 U	0.84 J	< 3.3 U	2.6 J	**15.0**	3.5	< 6.7 U
	11/4/2015	2.5	6.8	1.8	< 1.0 U	**140 F1K**	< 1.0 U	1.7	< 1.0 U	4.6	**76**	0.70 J	< 2.0 U
GM-68D	5/4/2007	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U	**1500**	< 50 U	< 50 U	**750**	< 50 U	< 100 U
	10/3/2008	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U	14	< 5.0 U	**190**	< 5.0 U	< 5.0 U	**46**	< 5.0 U	< 10 U
	11/16/2009	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	4.5	< 2.0 U	**130 J**	< 2.0 U	< 2.0 U	**35**	< 2.0 U	< 4.0 U
	9/29/2010	< 3.3 U	< 3.3 U	< 3.3 U	< 3.3 U	3.0 J	< 3.3 U	**100**	< 3.3 U	< 3.3 U	**22**	< 3.3 U	< 6.7 U
	9/30/2011	< 1.7 U	< 1.7 U	< 1.7 U	< 1.7 U	1.5 J	< 1.7 U	**62**	< 1.7 U	< 1.7 U	**13**	< 1.7 U	< 3.3 U
	9/7/2012	< 3.3 U	< 3.3 U	< 3.3 U	< 3.3 U	< 3.3 U	< 3.3 U	**49**	< 3.3 U	< 3.3 U	**6.9**	< 3.3 U	< 6.7 U
	9/26/2013	0.47 J	< 1.0 U	< 1.0 U	< 1.0 U	0.77 J	< 1.0 U	**45**	< 1.0 U	< 1.0 U	**5.6**	< 1.0 U	< 2.0 U
	10/10/2014	0.71 J	< 1.4 U	< 1.4 U	< 1.4 U	1.1 J	< 1.4 U	**36**	< 1.4 U	< 1.4 U	3.7	< 1.4 U	< 2.9 U
	11/3/2015	1.1	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	**30**	< 1.0 U	< 1.0 U	2.2	< 1.0 U	< 2.0 U
	8/17/2016	1.1	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	**31**	< 1.0 U	< 1.0 U	2.6	< 1.0 U	< 2.0 U
GM-69	5/3/2007	< 12 U	8.7 J	< 12 U	< 12 U	29	< 12 U	**6.5 J**	< 12 U	< 12 U	**300**	< 12 U	< 24 U
GM-70	5/3/2007	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	**11**	< 1.0 U	< 1.0 U	0.32 J	< 1.0 U	< 2.0 U
GM-73	10/23/2007	< 6.7 U	< 6.7 U	< 6.7 U	< 6.7 U	< 6.7 U	< 6.7 U	**160**	< 6.7 U	< 6.7 U	**22**	< 6.7 U	< 13 U
GM-74D	9/27/2007	< 8.0 U	< 8.0 U	< 8.0 U	< 8.0 U	< 8.0 U	< 8.0 U	**250**	< 8.0 U	< 8.0 U	**130**	< 8.0 U	< 16 U
	4/9/2010	< 2.5 U	< 2.5 U	< 2.5 U	< 2.5 U	8.0	< 2.5 U	**98**	< 2.5 U	< 2.5 U	**50**	< 2.5 U	< 5.0 U
	8/24/2015	0.98 J	< 1.0 U	< 1.0 U	< 1.0 U	3.0	< 1.0 U	**26**	< 1.0 U	< 1.0 U	**5.3**	1.3	< 2.0 U
GM-75D	9/26/2007	< 50 U	< 50 U	< 50 U	< 50 U	24 J	< 50 U	**470**	< 50 U	< 50 U	**1700 J**	< 50 U	< 100 U
	10/6/2008	< 33 U	< 33 U	< 33 U	< 33 U	**120**	< 33 U	**220**	< 33 U	< 33 U	**750**	< 33 U	< 67 U
	11/16/2009	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U	15	< 5.0 U	**320**	< 5.0 U	< 5.0 U	**210**	< 5.0 U	< 10 U
	4/8/2010	< 9.1 U	< 9.1 U	< 9.1 U	< 9.1 U	19	< 9.1 U	**320**	< 9.1 U	< 9.1 U	**200**	< 9.1 U	< 18 U
	9/29/2010	< 9.1 U	< 9.1 U	< 9.1 U	< 9.1 U	12	< 9.1 U	**260**	< 9.1 U	< 9.1 U	**190**	< 9.1 U	< 18 U
	9/30/2011	< 4.0 U	< 4.0 U	< 4.0 U	< 4.0 U	12	< 4.0 U	**200**	< 4.0 U	< 4.0 U	**180**	**2.1 J**	< 8.0 U
	9/7/2012	< 11 U	< 11 U	< 11 U	< 11 U	31	< 11 U	**150**	< 11 U	< 11 U	**150**	**4.7 J**	< 22 U
	9/27/2013	< 1.0 U	0.40 J	0.28 J	< 1.0 U	25	< 1.0 U	**180**	< 1.0 U	0.58 J	**180**	**3.2**	< 2.0 U
	12/4/2014	< 5.7 U	< 5.7 U	< 5.7 U	< 5.7 U	11	< 5.7 U	**190**	< 5.7 U	< 5.7 U	**180**	< 5.7 U	< 11 U
	12/8/2015	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	22	< 1.0 U	**140**	< 1.0 U	0.38 J	**150**	0.37 J	< 2.0 U
	8/24/2016	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	9.6	< 2.0 U	**200**	< 2.0 U	< 2.0 U	**220**	< 2.0 U	< 4.0 U

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RACER Trust Moraine Facilities
Moraine, Ohio

Well	Date	VOCs (ug/L)											
		1,1,1-TCA	1,1-DCA	1,1-DCE	Benzene	cis-1,2-DCE	Ethyl-benzene	PCE	Toluene	trans-1,2-DCE	TCE	Vinyl Chloride	Xylenes
MCL		200		7	5	70	700	5	1000	100	5	2	10,000
GM-76D	9/23/2007	< 1.0 U	0.30 J	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	0.63 J	< 1.0 U	< 1.0 U	2.7	< 1.0 U	< 2.0 U
	10/9/2014	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	0.24 J	< 1.0 U	**35**	< 1.0 U	< 1.0 U	**8.5**	< 1.0 U	< 2.0 U
	8/24/2015	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	0.36 J	< 1.0 U	**27**	< 1.0 U	< 1.0 U	**6.5**	< 1.0 U	< 2.0 U
	10/30/2015	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	**49**	< 2.0 U	< 2.0 U	**6.9**	< 2.0 U	< 4.0 U
GM-82	2/26/2008	< 2.0 U	2.3	< 2.0 U	< 2.0 U	47	< 2.0 U	**60**	< 2.0 U	1.9 J	**91**	< 2.0 U	< 4.0 U
	10/2/2008	1.0 J	2.4 J	0.64 J	< 3.3 U	46	< 3.3 U	**51**	< 3.3 U	2.0 J	**100**	< 3.3 U	< 6.7 U
	9/26/2013	0.49 J	1.4	0.60 J	< 1.0 U	41	< 1.0 U	**20**	< 1.0 U	1.3	**56**	**7.4**	< 2.0 U
	12/11/2015	< 2.0 U	1.5 J	< 2.0 U	< 2.0 U	30	< 2.0 U	**23**	< 2.0 U	1.2 J	**57**	0.63 J	< 4.0 U
GM-83D	2/26/2008	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	0.28 J	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	1.5	< 2.0 U
	10/2/2008	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 UJ	0.30 J	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	1.3	< 2.0 U
	11/11/2009	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	0.31 J	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	**2.1**	< 2.0 U
	9/22/2010	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	0.31 J	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	2.0	< 2.0 U
	9/28/2011	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	1.8	< 2.0 U
	9/7/2012	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	1.7	< 2.0 U
	9/26/2013	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	1.9	< 2.0 U
	10/9/2014	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	**2.6**	< 2.0 U
	10/30/2015	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	**2.0**	< 2.0 U
	8/19/2016	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	**3.1**	< 2.0 U
GM-84	2/26/2008	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	0.57 J	< 1.0 U	**5.5**	< 1.0 U	< 2.0 U
	10/2/2008	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 UJ	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	**6.6**	< 1.0 U	< 2.0 U
	11/16/2009	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	**6.3**	< 1.0 U	< 2.0 U
	1/27/2010	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	**6.4**	< 1.0 U	< 2.0 U
	9/23/2010	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	**5.9**	< 1.0 U	< 2.0 U
	9/29/2011	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	**5.7**	< 1.0 U	< 2.0 U
	9/7/2012	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	4.9	< 1.0 U	< 2.0 U
	9/26/2013	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	3.6	< 1.0 U	< 2.0 U
	10/8/2014	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	4.9	< 1.0 U	< 2.0 U
	10/30/2015	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	5	< 1.0 U	< 2.0 U
	8/17/2016	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	4.7	< 1.0 U	< 2.0 U

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RACER Trust Moraine Facilities
Moraine, Ohio

Well	Date	VOCs (ug/L)											
		1,1,1-TCA	1,1-DCA	1,1-DCE	Benzene	cis-1,2-DCE	Ethyl-benzene	PCE	Toluene	trans-1,2-DCE	TCE	Vinyl Chloride	Xylenes
MCL		200		7	5	70	700	5	1000	100	5	2	10,000
HR-13	9/15/1999	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	4.7	< 1.0 U	< 2.0 U
	9/29/2000	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	4.7	< 1.0 U	< 2.0 U
	11/14/2001	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	4.7	< 1.0 U	< 2.0 U
	9/30/2002	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	4.7	< 1.0 U	< 2.0 U
	9/16/2003	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	4.7	< 1.0 U	< 2.0 U
	9/21/2004	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	4.7	< 1.0 U	< 2.0 U
	10/25/2005	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	4.7	< 1.0 U	< 2.0 U
	9/25/2006	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	4.7	< 1.0 U	< 2.0 U
	8/26/2015	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	4.7	< 1.0 U	< 2.0 U
HR-14	9/15/1999	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	4.7	< 1.0 U	< 2.0 U
	9/30/2002	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	4.7	< 1.0 U	< 2.0 U
	8/26/2015	< 1.0 U	4.0	< 1.0 U	< 1.0 U	11	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	**6.0**	0.40 J	< 2.0 U
HR-15	9/15/1999	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	2.5	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	**11**	< 1.0 U
	9/29/2000	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	2.8	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	**11**	< 1.0 U
	11/14/2001	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	0.86	< 1.0 U	< 1.0 U	< 1.0 U	< 0.50 U	< 1.0 U	< 1.0 U	< 1.0 U
	9/30/2002	< 1.0 U	< 1.0 UJ	< 1.0 U	< 1.0 U	1.0	< 1.0 U	< 1.0 U	< 1.0 U	< 0.50 U	< 1.0 U	< 1.0 U	< 1.0 U
	9/17/2003	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	2.2	< 1.0 U	< 1.0 U	< 1.0 U	< 0.50 U	0.29 J	**14**	< 1.0 U
	9/21/2004	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	2.5	< 1.0 U	< 1.0 U	< 1.0 U	< 0.50 U	0.38 J	**19**	< 1.0 U
	10/25/2005	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	2.2	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	0.40 J	**14**	< 2.0 U
	9/25/2006	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	2.2	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	0.50 J	**13**	< 2.0 U
	9/26/2007	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	2.5	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	0.37 J	**15**	< 2.0 U
	9/29/2008	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	3.6	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	0.47 J	**9.7**	< 2.0 U
	11/13/2009	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	3.1	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	0.70 J	**6.5**	< 2.0 U
	9/24/2010	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	3.0	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	0.60 J	**3.8**	< 2.0 U
	9/28/2011	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	3.5	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	0.78 J	**2.4**	< 2.0 U
	9/6/2012	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	3.9	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	0.87 J	1.1	< 2.0 U
	9/26/2013	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	3.5	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	0.75 J	1.4	< 2.0 U
	10/7/2014	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	3.5	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	0.71 J	1.9	< 2.0 U
	11/4/2015	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	3.5	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	1.5	0.78 J	< 2.0 U
	8/19/2016	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	3.6	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	1.5	0.90 J	< 2.0 U
RMW-85	9/26/2012	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	**280**	< 10 U	< 10 U	**120**	< 10 U	< 20 U
	9/27/2013	0.19 J	0.84 J	0.26 J	< 1.0 U	60	< 1.0 U	**61**	< 1.0 U	0.48 J	**95**	0.31 J	< 2.0 U
	10/9/2014	< 2.0 U	< 2.0 U	< 2.0 U	0.75 J	55	< 2.0 U	**40**	< 2.0 U	1.8 J	**78**	**5.0**	< 4.0 U
	12/8/2015	< 1.0 U	0.41 J	< 1.0 U	< 1.0 U	18	< 1.0 U	**49**	< 1.0 U	< 1.0 U	**82**	**0.31 J**	< 2.0 U
	8/24/2016	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	18	< 2.0 U	**62**	< 2.0 U	< 2.0 U	**110**	< 2.0 U	< 4.0 U

Table D-2
Groundwater VOC Analytical Results for the Lower Aquifer Wells from 1999-2019
RACER Trust Moraine Facilities
Moraine, Ohio

Well	Date	VOCs (ug/L)											
		1,1,1-TCA	1,1-DCA	1,1-DCE	Benzene	cis-1,2-DCE	Ethyl-benzene	PCE	Toluene	trans-1,2-DCE	TCE	Vinyl Chloride	Xylenes
MCL		200		7	5	70	700	5	1000	100	5	2	10,000
RMW-86	9/26/2012	12	13	1.6 J	< 6.7 U	52	< 6.7 U	**48**	< 6.7 U	1.6 J	**190**	< 6.7 U	< 13 U
	9/26/2013	15	16	2.3	< 1.0 U	**110**	< 1.0 U	**41**	< 1.0 U	2.9	**190**	1.3	< 2.0 U
	10/8/2014	9.4	7.6	< 6.7 U	< 6.7 U	33	< 6.7 U	**29**	< 6.7 U	< 6.7 U	**140**	< 6.7 U	< 13 U
	12/8/2015	6.1	11	1.6	< 1.0 U	37	< 1.0 U	**40**	< 1.0 U	1.3	**110**	0.45 J	< 2.0 U
	8/17/2016	7.9	13	1.9	< 1.0 U	39	< 1.0 U	**59**	< 1.0 U	1.6	**120**	0.42 J	< 2.0 U
RMW-87	9/26/2012	< 1.0 U	15	< 1.0 U	0.13 J	23	< 1.0 U	< 1.0 U	0.39 J	1.3	**7.5**	0.93 J	< 2.0 U
	9/26/2013	< 1.0 U	18	< 1.0 U	< 1.0 U	43	< 1.0 U	< 1.0 U	< 1.0 U	2.2	**9.8**	1.3	< 2.0 U
	10/9/2014	< 2.2 U	13	< 2.2 U	< 2.2 U	62	< 2.2 U	< 2.2 U	< 2.2 U	2.7	**10**	< 2.2 U	< 4.4 U
	11/5/2015	< 1.0 U	7.8	< 1.0 U	< 1.0 U	58	< 1.0 U	< 1.0 U	< 1.0 U	2.1	**10**	0.42 J	< 2.0 U
	8/19/2016	< 1.0 U	7.8	< 1.0 U	< 1.0 U	43 K	< 1.0 U	< 1.0 U	< 1.0 U	2.3	**11**	0.35 J	< 2.0 U
Downgradient of the Site													
DN-13	11/14/2001	1.1	2.5	< 1.0 U	< 1.0 U	6.2	< 1.0 U	< 1.0 U	< 1.0 U	0.37J	5.0	1.2	< 1.0 U
	9/27/2002	1.1	2.5	< 1.0 U	< 1.0 U	7.3	< 1.0 U	< 1.0 U	< 1.0 U	0.48J	**6.1**	1.3	< 1.0 U
	9/22/2003	1.1	2.4	< 1.0 U	< 1.0 U	6.8	< 1.0 U	0.31 J	< 1.0 U	0.4 J	**6.4**	1.1	< 1.0 U
	9/16/2004	0.84 J	2.2	< 1.0 U	< 1.0 U	6.7	< 1.0 U	0.44 J	< 1.0 U	0.49 J	**6.8**	**2.1**	< 1.0 U
	10/20/2005	1.5	2.0	< 1.0 U	< 1.0 U	5.5	< 1.0 U	0.38 J	< 1.0 U	< 1.0 U	**7.2**	**2.6**	< 2.0 U
	9/27/2006	0.51 J	1.5	< 1.0 U	< 1.0 U	6.1	< 1.0 U	0.33 J	< 1.0 U	0.41 J	**5.7**	**2.3**	< 2.0 U
	9/19/2007	0.48 J	2.0	< 1.0 U	< 1.0 U	6.4	< 1.0 U	< 1.0 U	< 1.0 U	0.4 J	3.3	**2.6**	< 2.0 U
	9/24/2008	0.63 J	< 1.7 U	< 1.0 U	< 1.0 U	6.2	< 1.0 U	< 1.0 U	< 1.0 U	0.44 J	4.5	1.4	< 2.0 U
	11/11/2009	0.77 J	2.1	< 1.0 U	< 1.0 U	7.9	< 1.0 U	0.33 J	< 1.0 U	0.50 J	**6.5**	1.7	< 2.0 U
	9/22/2010	0.48 J	1.6	< 1.0 U	< 1.0 U	6.9	< 1.0 U	< 1.0 U	< 1.0 U	0.44 J	5.0	1.3	< 2.0 U
	9/28/2011	< 1.0 U	1.5	< 1.0 U	< 1.0 U	6.3	< 1.0 U	0.40 J	< 1.0 U	0.38 J	4.8	1.3	< 2.0 U
	9/6/2012	0.99 J	2.0	< 1.0 U	< 1.0 U	7.5	< 1.0 U	0.76 J	< 1.0 U	0.47 J	**7.9**	1.2	< 2.0 U
	9/27/2013	0.93 J	1.9	< 1.0 U	< 1.0 U	6.9	< 1.0 U	0.58 J	< 1.0 U	0.55 J	**8.4**	1.1	< 2.0 U
	12/4/2014	0.86 J	1.6	< 1.0 U	< 1.0 U	5.9	< 1.0 U	3.5	< 1.0 U	0.41 J	**10**	0.79 J	< 2.0 U
	11/5/2015	0.81 J	1.3	< 1.0 U	< 1.0 U	5.5	< 1.0 U	2.5	< 1.0 U	0.42 J	**9**	0.70 J	< 2.0 U
	8/25/2016	0.97 J	1.3	< 1.0 U	< 1.0 U	5.6	< 1.0 U	1.5	< 1.0 U	0.37 J	**8.1**	< 1.0 U	< 2.0 U
	8/15/2017	0.93 J	1.5	< 1.0 U	< 1.0 U	5.8	< 1.0 U	2.1	< 1.0 U	0.43 J	**8.0**	0.86 J	< 2.0 U
	7/24/2018	0.52 J	1.1	< 1.0 U	< 1.0 U	4.7	< 1.0 U	1.4	< 1.0 U	0.28 J	**6.2**	0.53 J	< 2.0 U
	7/11/2019	0.66 J	1.0	< 1.0 U	< 1.0 U	4.4	< 1.0 U	0.87 J	< 1.0 U	0.23 J	**5.6**	0.30 J	< 2.0 U

Table D-2
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RACER Trust Moraine Facilities
Moraine, Ohio

Well	Date	VOCs (ug/L)											
		1,1,1-TCA	1,1-DCA	1,1-DCE	Benzene	cis-1,2-DCE	Ethyl-benzene	PCE	Toluene	trans-1,2-DCE	TCE	Vinyl Chloride	Xylenes
MCL		200		7	5	70	700	5	1000	100	5	2	10,000
GM-1	9/28/1999	1.1	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	2.0	5.2	< 1.0 U	**31**	< 1.0 U	< 1.0 U
	10/2/2000	2.2	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	2.8	< 1.0 U	< 1.0 U	**37**	< 1.0 U	< 1.0 U
	11/14/2001	0.80J	0.29J	< 1.0 U	< 1.0 U	< 0.50 U	< 1.0 U	1.3	< 1.0 U	< 0.50 U	**19**	< 1.0 U	< 1.0 U
	10/1/2002	1.3 J	0.48 J	< 1.4 U	< 1.4 U	0.95	< 1.4 U	2.3	< 1.4 U	< 0.72 U	**39**	< 1.4 U	< 1.4 U
	10/2/2003	1.2	< 1.0 U	< 1.0 U	< 1.0 U	< 0.50 U	< 1.0 U	2.0	< 1.0 U	< 0.50 U	**34**	< 1.0 U	< 1.0 U
	9/21/2004	1.2	< 1.0 U	< 1.0 U	< 1.0 U	< 0.50 U	< 1.0 U	2.1	< 1.0 U	< 0.50 U	**35**	< 1.0 U	< 1.0 U
	10/25/2005	0.95 J	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	2.1	< 1.0 U	< 1.0 U	**34**	< 1.0 U	< 2.0 U
	9/20/2006	0.76 J	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	2.1	< 1.0 U	< 1.0 U	**34**	< 1.0 U	< 2.0 U
	9/18/2007	0.74 J	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	1.8	< 1.0 U	< 1.0 U	**32**	< 1.0 U	< 2.0 U
	9/24/2008	0.69 J	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	1.8	< 1.0 U	< 1.0 U	**31**	< 1.0 U	< 2.0 U
	9/5/2012	0.42 J	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	1.1	< 1.0 U	< 1.0 U	**26**	< 1.0 U	< 2.0 U
	9/25/2013	0.41 J	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	0.83 J	< 1.0 U	< 1.0 U	**21**	< 1.0 U	< 2.0 U
GM-3	9/28/1999	1.7	< 1.0 U	< 1.0 U	< 1.0 U	1.1	< 1.0 U	1.2	< 1.0 U	< 1.0 U	**7.5**	< 1.0 U	< 1.0 U
	10/2/2000	1.0	2.1	< 1.0 U	< 1.0 U	8.3	< 1.0 U	1.5	< 1.0 U	1.1	**9.4**	< 1.0 U	< 1.0 U
	11/14/2001	0.16 J	0.95 J	< 1.0 U	< 1.0 U	2.6	< 1.0 U	0.48 J	< 1.0 U	0.25 J	2.9	< 1.0 U	< 1.0 U
	10/1/2002	0.74 J	1.8	< 1.0 U	< 1.0 U	8.9	< 1.0 U	1.4	< 1.0 U	1.2	**9.5**	0.63 J	< 1.0 U
	10/2/2003	0.96 J	1.6	< 1.0 U	< 1.0 U	5.5	0.26 J	1.7	< 1.0 U	0.77	**12**	< 1.0 U	< 1.0 U
	9/21/2004	1.0	1.8	< 1.0 U	< 1.0 U	4.9	< 1.0 U	2.0	< 1.0 U	0.75	**13**	< 1.0 U	< 1.0 U
	10/25/2005	0.83 J	1.6	< 1.0 U	< 1.0 U	4.7	< 1.0 U	2.0	< 1.0 U	0.66 J	**14**	< 1.0 U	< 2.0 U
	9/22/2006	0.59 J	2.0 J	< 1.0 UJ	< 1.0 UJ	6.1 J	< 1.0 UJ	2.1 J	< 1.0 UJ	1.0 J	**13 J**	0.27 J	< 2.0 UJ
	9/18/2007	0.67 J	1.5	< 1.0 U	< 1.0 U	3.8	< 1.0 U	1.9	< 1.0 U	0.77 J	**14**	< 1.0 U	< 2.0 U
	9/24/2008	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 UJ	< 1.0 U	< 1.0 U	< 1.0 UJ	< 1.0 U	< 2.0 U
	9/25/2013	0.54 J	0.86 J	< 1.0 U	< 1.0 U	1.7	< 1.0 U	2.3	< 1.0 U	0.29 J	**15**	< 1.0 U	< 2.0 U
GM-4	9/28/1999	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	2.3	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	**13.4**	< 1.0 U	< 1.0 U
GM-5	9/28/1999	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	3.9	< 1.0 U	1.3	< 1.0 U	< 1.0 U

Table D-2
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RACER Trust Moraine Facilities
Moraine, Ohio

Well	Date	VOCs (ug/L)											
		1,1,1-TCA	1,1-DCA	1,1-DCE	Benzene	cis-1,2-DCE	Ethyl-benzene	PCE	Toluene	trans-1,2-DCE	TCE	Vinyl Chloride	Xylenes
MCL		200		7	5	70	700	5	1000	100	5	2	10,000
GM-9	9/24/1999	1.0	< 1.0 U	< 1.0 U	< 1.0 U	1.0	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	**14**	< 1.0 U	< 1.0 U
	10/3/2000	1.2	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	**17**	< 1.0 U	< 1.0 U
	11/14/2001	0.48J	0.58J	< 1.0 U	< 1.0 U	1.1	< 1.0 U	0.38 J	< 1.0 U	< 0.50 U	**8.6**	< 1.0 U	< 1.0 U
	9/30/2002	0.99J	0.48J	< 1.0 U	< 1.0 U	0.66	< 1.0 U	< 1.0 U	< 1.0 U	< 0.50 U	**16**	< 1.0 U	< 1.0 U
	9/24/2003	1.3	0.45 J	< 1.0 U	< 1.0 U	0.56	< 1.0 U	< 1.0 U	< 1.0 U	< 0.50 U	**20**	< 1.0 U	< 1.0 U
	9/21/2004	1.1	0.6 J	< 1.0 U	< 1.0 U	0.97	< 1.0 U	< 1.0 U	< 1.0 U	< 0.50 U	**16**	< 1.0 U	< 1.0 U
	10/26/2005	0.85 J	0.59 J	< 1.0 U	< 1.0 U	0.99 J	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	**15**	< 1.0 U	< 2.0 U
	9/25/2006	0.44 J	0.48 J	< 1.0 U	< 1.0 U	0.85 J	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	**6.6**	< 1.0 U	< 2.0 U
	9/19/2007	1.2	0.48 J	< 1.0 U	< 1.0 U	0.71 J	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	**18**	< 1.0 U	< 2.0 U
	9/24/2008	1.2	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	**18**	< 1.0 U	< 2.0 U
	9/22/2010	1.0	0.35 J	< 1.0 U	< 1.0 U	0.46 J	< 1.0 U	< 1.0 UJ	< 1.0 U	< 1.0 U	**17 J**	< 1.0 U	< 2.0 U
	9/28/2011	< 1.0 U	0.50 J	< 1.0 U	< 1.0 U	1.0	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	**13**	< 1.0 U	< 2.0 U
	9/5/2012	24	<22 U	<22 U	<22 U	7.9 J	<22 U	<22 U	<22 U	<22 U	**340**	<22 U	<44 U
	9/26/2012	1.1	0.24 J	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	**16**	< 1.0 U	< 2.0 U
	9/25/2013	1.4	< 1.0 U	< 1.0 U	< 1.0 U	0.44 J	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	**19**	< 1.0 U	< 2.0 U
	10/6/2014	1.2	0.39 J	< 1.0 U	< 1.0 U	0.54 J	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	**17**	< 1.0 U	< 2.0 U
	12/11/2015	0.92 J	< 1.0 U	< 1.0 U	< 1.0 U	0.26 J	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	**12**	< 1.0 U	< 2.0 U
	8/17/2016	1.0	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	**13**	< 1.0 U	< 2.0 U
	08/15/2017	0.84 J	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	**12**	< 1.0 U	< 2.0 U
	7/24/2018	0.49 J	0.18 J	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	**9.1**	< 1.0 U	< 2.0 U
	7/11/2019	0.51 J	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	**6.0**	< 1.0 U	< 2.0 U

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Moraine, Ohio

Well	Date	VOCs (ug/L)											
		1,1,1-TCA	1,1-DCA	1,1-DCE	Benzene	cis-1,2-DCE	Ethyl-benzene	PCE	Toluene	trans-1,2-DCE	TCE	Vinyl Chloride	Xylenes
MCL		200		7	5	70	700	5	1000	100	5	2	10,000
GM-11	9/24/1999	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	1.5	< 1.0 U	< 1.0 U	**15**	< 1.0 U	< 1.0 U
	10/2/2000	1.4	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	3.0	< 1.0 U	< 1.0 U	**41**	< 1.0 U	< 1.0 U
	11/14/2001	0.33J	< 1.0 U	< 1.0 U	< 1.0 U	< 0.50 U	< 1.0 U	1.0	< 1.0 U	< 0.50 U	**12**	< 1.0 U	< 1.0 U
	10/1/2002	1.0	0.34J	< 1.0 U	< 1.0 U	0.62	< 1.0 U	2.2	< 1.0 U	< 0.50 U	**35**	< 1.0 U	< 1.0 U
	9/24/2003	0.96 J	< 1.0 U	< 1.0 U	< 1.0 U	< 0.50 U	< 1.0 U	2.2	< 1.0 U	< 0.50 U	**33**	< 1.0 U	< 1.0 U
	9/21/2004	0.89 J	< 1.0 U	< 1.0 U	< 1.0 U	< 0.50 U	< 1.0 U	2.1	< 1.0 U	< 0.50 U	**33**	< 1.0 U	< 1.0 U
	10/26/2005	0.75 J	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	1.7	< 1.0 U	< 1.0 U	**32**	< 1.0 U	< 2.0 U
	9/25/2006	0.75 J	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	2.0	< 1.0 U	< 1.0 U	**34**	< 1.0 U	< 2.0 U
	9/18/2007	0.6 J	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	1.5	< 1.0 U	< 1.0 U	**35**	< 1.0 U	< 2.0 U
	9/24/2008	0.47 J	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	1.7	< 1.0 U	< 1.0 U	**31**	< 1.0 U	< 2.0 U
	11/12/2009	0.47 J	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	1.8	< 1.0 U	< 1.0 U	**37**	< 1.0 U	< 2.0 U
	9/22/2010	0.36 J	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	1.5	< 1.0 U	< 1.0 U	**31**	< 1.0 U	< 2.0 U
	9/28/2011	< 1.4 U	< 1.4 U	< 1.4 U	< 1.4 U	< 1.4 U	< 1.4 U	1.1 J	< 1.4 U	< 1.4 U	**24**	< 1.4 U	< 2.9 U
	9/5/2012	0.32 J	< 1.0 U	< 1.0 U	< 1.0 U	0.39 J	< 1.0 U	1.2	< 1.0 U	< 1.0 U	**25**	< 1.0 U	< 2.0 U
	9/25/2013	0.32 J	< 1.0 U	< 1.0 U	< 1.0 U	0.40 J	< 1.0 U	1.3	< 1.0 U	< 1.0 U	**23**	< 1.0 U	< 2.0 U
	10/7/2014	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	1.1	< 1.0 U	< 1.0 U	**17**	< 1.0 U	< 2.0 U
	11/3/2015	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	0.89 J	< 1.0 U	< 1.0 U	**13**	< 1.0 U	< 2.0 U
	8/18/2016	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	1.2	< 1.0 U	< 1.0 U	**12**	< 1.0 U	< 2.0 U
GM-13	9/24/1999	1.9	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	3.6	< 1.0 U	< 1.0 U	**31**	< 1.0 U	< 1.0 U
GM-14	9/24/1999	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U

Table D-2
Groundwater VOC Analytical Results for the Lower Aquifer Wells from 1999-2019
RACER Trust Moraine Facilities
Moraine, Ohio

Well	Date	VOCs (ug/L)											
		1,1,1-TCA	1,1-DCA	1,1-DCE	Benzene	cis-1,2-DCE	Ethyl-benzene	PCE	Toluene	trans-1,2-DCE	TCE	Vinyl Chloride	Xylenes
MCL		200		7	5	70	700	5	1000	100	5	2	10,000
GM-15	9/24/1999	< 1.0 U	2.4	< 1.0 U	< 1.0 U	4.3	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	4.1	< 1.0 U	< 1.0 U
	10/2/2000	< 1.0 U	2.3	< 1.0 U	< 1.0 U	2.6	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	4.7	< 1.0 U	< 1.0 U
	11/14/2001	< 1.0 U	1.4	< 1.0 U	< 1.0 U	1.2	< 1.0 U	< 1.0 U	< 1.0 U	< 0.50 U	4.9	< 1.0 U	< 1.0 U
	9/27/2002	< 1.0 U	1.6	< 1.0 U	< 1.0 U	1.8	< 1.0 U	< 1.0 U	< 1.0 U	< 0.50 U	4.7	< 1.0 U	< 1.0 U
	9/22/2003	< 1.0 U	1.7	< 1.0 U	< 1.0 U	1.6	< 1.0 U	< 1.0 U	< 1.0 U	< 0.50 U	**5.9**	< 1.0 U	< 1.0 U
	9/20/2004	< 1.0 U	1.8	< 1.0 U	< 1.0 U	1.4	< 1.0 U	< 1.0 U	< 1.0 U	< 0.50 U	**5.8**	< 1.0 U	< 1.0 U
	10/26/2005	< 1.0 U	1.7	< 1.0 U	< 1.0 U	1.7	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	**5.9**	< 1.0 U	< 2.0 U
	9/18/2006	< 1.0 U	1.6	< 1.0 U	< 1.0 U	1.2	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	**6.3**	< 1.0 U	< 2.0 U
	9/25/2007	< 1.0 U	1.5	< 1.0 U	< 1.0 U	1.1	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	**5.1**	< 1.0 U	< 2.0 U
	9/30/2008	< 1.0 U	1.1	< 1.0 U	< 1.0 U	0.79 J	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	**6.2**	< 1.0 U	< 2.0 U
	11/13/2009	< 1.0 U	1.2	< 1.0 U	< 1.0 U	1.0	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	**6.5**	< 1.0 U	< 2.0 U
	9/23/2010	< 1.0 U	1.2	< 1.0 U	< 1.0 U	1.0	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	**6.5**	< 1.0 U	< 2.0 U
	9/29/2011	< 1.0 U	1.1	< 1.0 U	< 1.0 U	1.1	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	4.7	< 1.0 U	< 2.0 U
	9/5/2012	0.23 J	1.3	< 1.0 U	< 1.0 U	2.2	< 1.0 U	< 1.0 U	0.33 J	0.31 J	**6.1**	< 1.0 U	< 2.0 U
	9/25/2013	< 1.0 U	1.3	< 1.0 U	< 1.0 U	1.8	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	4.5	0.19 J	< 2.0 U
	10/7/2014	< 1.0 U	1.5	< 1.0 U	< 1.0 U	2.4	< 1.0 U	< 1.0 U	< 1.0 U	0.42 J	4.1	0.38 J	< 2.0 U
	11/4/2015	< 1.0 U	1.8	< 1.0 U	< 1.0 U	7.7	< 1.0 U	< 1.0 U	< 1.0 U	0.77 J	**6.6**	0.47 J	< 2.0 U
	8/18/2016	< 1.0 U	2.0	< 1.0 U	< 1.0 U	8.3	< 1.0 U	< 1.0 U	< 1.0 U	0.75 J	**6.3**	0.69 J	< 2.0 U
	7/31/2017	< 1.0 U	2.1	< 1.0 U	< 1.0 U	7.7	< 1.0 U	< 1.0 U	< 1.0 U	0.77 J	**5.7**	0.58 J	< 2.0 U
	7/24/2018	< 1.0 U	1.9	< 1.0 U	< 1.0 U	6.6	< 1.0 U	< 1.0 U	< 1.0 U	0.66 J	**5.8**	0.50 J	< 2.0 U
	7/8/2019	< 1.0 U	2.3	< 1.0 U	< 1.0 U	9.4	< 1.0 U	< 1.0 U	< 1.0 U	0.68 J	**5.7**	0.68 J	< 2.0 U

Table D-2
Groundwater VOC Analytical Results for the Lower Aquifer Wells from 1999-2019
RACER Trust Moraine Facilities
Moraine, Ohio

Well	Date	VOCs (ug/L)											
		1,1,1-TCA	1,1-DCA	1,1-DCE	Benzene	cis-1,2-DCE	Ethyl-benzene	PCE	Toluene	trans-1,2-DCE	TCE	Vinyl Chloride	Xylenes
MCL		200		7	5	70	700	5	1000	100	5	2	10,000
GM-20D	9/24/1999	< 1.0 U	2.0	< 1.0 U	< 1.0 U	8.3	< 1.0 U	< 1.0 U	< 1.0 U	0.75 J	**6.3**	0.69 J	< 2.0 U
	10/3/2000	< 1.0 U	2.0	< 1.0 U	< 1.0 U	8.3	< 1.0 U	< 1.0 U	< 1.0 U	0.75 J	**6.3**	0.69 J	< 2.0 U
	11/14/2001	< 1.0 U	2.0	< 1.0 U	< 1.0 U	8.3	< 1.0 U	< 1.0 U	< 1.0 U	0.75 J	**6.3**	0.69 J	< 2.0 U
	9/30/2002	< 1.0 U	2.0	< 1.0 U	< 1.0 U	8.3	< 1.0 U	< 1.0 U	< 1.0 U	0.75 J	**6.3**	0.69 J	< 2.0 U
	9/22/2003	< 1.0 U	2.0	< 1.0 U	< 1.0 U	8.3	< 1.0 U	< 1.0 U	< 1.0 U	0.75 J	**6.3**	0.69 J	< 2.0 U
	9/21/2004	< 1.0 U	2.0	< 1.0 U	< 1.0 U	8.3	< 1.0 U	< 1.0 U	< 1.0 U	0.75 J	**6.3**	0.69 J	< 2.0 U
	10/26/2005	< 1.0 U	2.0	< 1.0 U	< 1.0 U	8.3	< 1.0 U	< 1.0 U	< 1.0 U	0.75 J	**6.3**	0.69 J	< 2.0 U
	9/26/2006	< 1.0 U	2.0	< 1.0 U	< 1.0 U	8.3	< 1.0 U	< 1.0 U	< 1.0 U	0.75 J	**6.3**	0.69 J	< 2.0 U
	9/19/2007	< 1.0 U	2.0	< 1.0 U	< 1.0 U	8.3	< 1.0 U	< 1.0 U	< 1.0 U	0.75 J	**6.3**	0.69 J	< 2.0 U
	9/25/2008	< 1.0 U	2.0	< 1.0 U	< 1.0 U	8.3	< 1.0 U	< 1.0 U	< 1.0 U	0.75 J	**6.3**	0.69 J	< 2.0 U
	11/13/2009	< 1.0 U	2.0	< 1.0 U	< 1.0 U	8.3	< 1.0 U	< 1.0 U	< 1.0 U	0.75 J	**6.3**	0.69 J	< 2.0 U
	9/22/2010	0.32 J	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	2.2	< 1.0 U	< 1.0 U	**6.5**	< 1.0 U	< 2.0 U
	9/28/2011	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	2.2	< 1.0 U	< 1.0 U	5.0	< 1.0 U	< 2.0 U
	9/5/2012	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	3.7	< 1.0 U	< 2.0 U
	9/25/2013	0.32 J	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	1.3	< 1.0 U	< 1.0 U	**5.3**	< 1.0 U	< 2.0 U
	10/6/2014	0.32 J	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	1.7	< 1.0 U	< 1.0 U	3.1	< 1.0 U	< 2.0 U
	11/3/2015	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	2.5	< 1.0 U	< 1.0 U	1.6	< 1.0 U	< 2.0 U
	8/19/2016	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	1.3	< 1.0 U	< 1.0 U	1.5	< 1.0 U	< 2.0 U
	08/15/2017	0.23 J	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	1.9	< 1.0 U	< 1.0 U	1.1	< 1.0 U	< 2.0 U
	7/24/2018	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	1.0	< 1.0 U	< 1.0 U	0.63 J	< 1.0 U	< 2.0 U
	7/11/2019	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	0.37 J	< 1.0 U	< 1.0 U	0.48 J	< 1.0 U	< 2.0 U
GM-56	9/14/2006	0.35 J	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	0.57 J	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 2.0 U
	9/5/2012	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	2.4	0.47 J	< 1.0 U	< 1.0 U	< 1.0 U	0.28 J
GM-65D	5/2/2007	0.40 J	1.4	< 1.0 U	< 1.0 U	1.5	< 1.0 U	< 1.0 U	< 1.0 U	0.21 J	1.3	< 1.0 U	< 2.0 U
	1/21/2008	0.32 J	0.94 J	< 1.0 U	< 1.0 U	1.0	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	1.1	< 1.0 U	< 2.0 U
	1/27/2010	0.88 J	1.2	< 1.0 U	< 1.0 U	1.1	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	1.5	< 1.0 U	< 2.0 U
	9/14/2018	1.7	0.33 J	< 1.0 U	< 1.0 U	0.28 J	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	3.0	< 1.0 U	< 2.0 U

Table D-2
Groundwater VOC Analytical Results for the Lower Aquifer Wells from 1999-2019
RACER Trust Moraine Facilities
Moraine, Ohio

Well	Date	VOCs (ug/L)											
		1,1,1-TCA	1,1-DCA	1,1-DCE	Benzene	cis-1,2-DCE	Ethyl-benzene	PCE	Toluene	trans-1,2-DCE	TCE	Vinyl Chloride	Xylenes
MCL		200		7	5	70	700	5	1000	100	5	2	10,000
GM-77D	9/27/2007	< 1.4 U	< 1.4 U	< 1.4 U	< 1.4 U	< 1.4 U	< 1.4 U	**45**	< 1.4 U	< 1.4 U	< 1.4 U	< 1.4 U	< 2.9 U
	1/28/2010	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	**18**	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 2.0 U
	9/7/2012	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	**11**	0.17 J	< 1.0 U	< 1.0 U	< 1.0 U	< 2.0 U
	9/26/2013	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	**12**	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 2.0 U
	10/8/2014	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	**14**	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 2.0 U
	11/3/2015	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	**18**	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 2.0 U
	8/17/2016	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	**17**	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 2.0 U
MT-69 (1)	9/24/1999	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
	10/3/2000	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
	11/15/2001	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 0.50 U	< 1.0 U	< 1.0 U	< 1.0 U	< 0.50 U	< 1.0 U	< 1.0 U	< 1.0 U
	9/30/2002	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 0.50 U	< 1.0 U	< 1.0 U	< 1.0 U	< 0.50 U	< 1.0 U	< 1.0 U	< 1.0 U
	10/1/2003	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 0.50 U	< 1.0 U	< 1.0 U	< 1.0 U	< 0.50 U	< 1.0 U	< 1.0 U	< 1.0 U
	9/27/2004	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 0.50 U	< 1.0 U	< 1.0 U	< 1.0 U	< 0.50 U	< 1.0 U	< 1.0 U	< 1.0 U
	10/24/2005	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 2.0 U
	9/26/2006	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 2.0 U
	9/27/2007	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 2.0 U

NOTES:

< - Constituent not detected above laboratory reporting limit shown.
(1) - Well unusable - collapsed screen.
1,1,1-TCA - 1,1,1-Trichloroethane.
1,1-DCA - 1,1-Dichloroethane.
1,1-DCE - 1,1-Dichloroethene.
BOLD - Result above MCL.
cis-1,2-DCE - cis-1,1-Dichloroethene.
F1 - MS and/or MSD Recovery is outside acceptance limits.
J - Value is estimated.
K - The compound was positively identified; however, the associated numerical value is an estimated concentration only and the reported value may be biased high. Actual concentration is expect lower.
MCL - Maximum Contaminant Level.
PCE - Tetrachloroethene.
trans-1,2-DCE - trans-1,2-Dichloroethene.
TCE - Trichloroethene.
U - Constituent not detected above laboratory limit shown.
ug/L - Micrograms per Liter.
VOCs - Volatile Organic Compounds.

APPENDIX E

2019 Supplemental Annual Report

February 25, 2020

Ohio Environmental Protection Agency
Southwest District Office
401 East Fifth Street
Dayton, OH 45402-2911
Attn: Brian Gitzinger

RE: Response to Ohio EPA Comments – 2018 Groundwater Monitoring Report
RACER Trust Moraine Facilities
Moraine, Ohio

Dear Mr. Gitzinger:

The Revitalizing Auto Communities Environmental Response Trust (RACER Trust) is providing responses to Ohio Environmental Protection Agency (Ohio EPA) comments that were provided in a letter dated September 24, 2019 regarding the 2018 Groundwater Monitoring Report (Annual Report) for the RACER Trust Moraine Facilities in Moraine, Ohio (Site). The Annual Report presents the groundwater monitoring activities completed to assess the performance of the corrective measures completed in 2018 at the following facilities: former Delphi Harrison Thermal Systems, Moraine Plant, former General Motors Powertrain Group, Moraine Engine Plant and former General Motors Truck Group, and Moraine Assembly Plant. The Ohio EPA comments and the associated responses are provided below.

Recommendation 1

The statistical analyses presented in the 2018 supplementary annual report could not be verified because the historical data for the lagoon monitoring wells was not included. Section 7 – STATISTICAL EVALUATIONS states data considered in the evaluations included data ranging back to the initial post-closure monitoring event conducted in November 2001. Ohio EPA requests inclusion of the analytical summary table previously titled: Ground Water VOC Analytical Results for the Upper Aquifer Wells from 1999 to 2018 (e.g. Appendix B: Table B-1 provided in the 2017 Supplementary Annual report). Include the analytical summary table (similar to Table B-1 in the 2017 Report) for the wells used to monitor the North and South Lagoons. In the 2019 annual report include the updated historical data summary tables and continue to include these tables in future supplementary annual reports.

Response 1

Historical site-specific VOC data collected since the initial post closure monitoring event is included as Attachment E-4 in the 2019 Supplemental Annual Report and will continue to be presented in future Supplemental Annual Reports.

Recommendation 2

The Excel database does not include all field parameters that are collected during the annual sampling event. The 2002 Site-Wide Groundwater Monitoring Plan (Section 3.5.1) states field parameters: pH, specific conductance, temperature, oxidation/reduction potential, and dissolved

oxygen will be measured in a flow-through cell during sampling at each upper aquifer monitoring well. Please add this datum to the excel databases. The missing field parameters, including specific conductance, temperature, Redox, and either dissolved oxygen and/or turbidity should be added to the next annual report. Please continue to include pH and ground water levels on the GWData database and list all field and lab parameters in the databases in future supplementary annual reports. These field parameters can be used to "evaluate changes and or trends in ground water quality" as stated in the GWMP.

Response 2

The parameters collected during low-flow groundwater sampling events are recorded on the Groundwater Sampling Forms in Attachment E-1. In addition, the field parameters, including specific conductance, temperature, Redox, dissolved oxygen and turbidity will be added to GWData database in the Supplemental Annual Report for 2019 and in future Supplementary Annual Reports.

Recommendation 3

To satisfy the requirements of Ohio Administrative Code (OAC) Rule 3445-54-97(A) the owner or operator is requested to include a statement attesting that the ground water sample data is representative, valid, and usable for its intended purpose. It is recommended that RACER include this statement in a discussion on data validation and quality assurance/quality control (QA/QC) sampling. Include a discussion on the results of the equipment and trip blanks, duplicates, and lab control samples, and provide clarification of any concerns detected in the sampling event(s) in the 2019 annual report.

Response 3

A statement attesting that the ground water sample data is representative, valid, and usable for it is intended purpose will be included in the 2019 Supplemental Annual Report. The data validation report for the 2019 groundwater sampling data includes discussion on data validation and quality assurance/quality control (QA/QC) sampling, the results of the equipment and trip blanks, duplicates, and lab control samples and provided as Attachment E-3. If there were any concerns related to the sampling events or the laboratory data, a discussion and clarification will be noted in the future annual reports.

Recommendation 4

To satisfy the requirement of OAC 3745-54-98(E) the owner or operator is requested to include the calculated ground water flow rate of the uppermost aquifer in future reports. It is suggested this information be included in the section discussing "Ground Water Elevation Monitoring" in the 2019 annual report.

Response 4

The calculated ground water flow rate of the uppermost aquifer is included in the "2. Groundwater Flow Data" section of the 2019 Supplemental Annual Report and will be included in future annual reports.

We look forward to working with you as we work toward our collective remedial goals. If you have any questions, please contact me at (937) 751-8635.

Sincerely,

Pamela L. Barnett, PG
Cleanup Manager (DE, LA, MA, OH, PA, VA)
RACER Trust

Cc:
Molly Finn, U.S. EPA

MEMO

ARCADIS Design & Consultancy for natural and built assets

To:

Brian Gitzinger, Ohio EPA

Copies:

Pam Barnett, RACER Trust

Molly Finn, U.S. EPA

Arcadis U.S., Inc.
100 E. Campus View Blvd
Suite 230
Columbus, Ohio 43235
Tel 614 985 9100
Fax 614 985 9170

From:

Arcadis, Inc.

Date:

February 25, 2020

Arcadis Project No.:

30018090.0004B

Subject:

2019 Supplementary Annual Report

On September 24, 2019, the Ohio Environmental Protection Agency (Ohio EPA) provided comments regarding the 2018 Groundwater Monitoring Report (Ohio EPA, 2019). In this letter, a request was made regarding the inclusion of additional information regarding the statistical evaluation, groundwater field parameters, upper aquifer groundwater flow rates, and certification statement to the validity of the data as representative to be included in Supplementary Annual Reports. That information has been added to this Supplemental Annual Report.

GROUNDWATER SAMPLING PROGRAM

The Site-Wide Groundwater Monitoring Plan (Arcadis G&M, Inc., 2002) was developed to meet the objectives of the Ohio EPA post-closure monitoring for the closed North and South Settling Lagoons. For 2019, the site-specific Volatile Organic Compound (VOC) groundwater data is summarized in Table 3 of the Main Report. The following sections summarize collection of the annual groundwater elevation measurements, groundwater monitoring, and statistical evaluation.

Groundwater samples were analyzed for the site-specific VOC parameter list using SW846 Method 8260B. This parameter list was developed after evaluating data from the September 1999 baseline groundwater sampling event and the one-time sampling event conducted in September/October 2000 (which included analysis of Appendix IX VOCs, cis-1,2-DCE, SVOCs, and metals) as part of the Former Oil House Area interim measures. The site-specific VOCs include: benzene, 1,1-dichloroethane (1,1-DCA), 1,1-dichloroethene (1,1-DCE), cis-1,2-DCE, trans-1,2-dichloroethene (trans-1,2-DCE),

ethylbenzene, tetrachloroethene (PCE), toluene, 1,1,1-trichloroethane (1,1,1-TCA), trichloroethene (TCE), vinyl chloride, and xylenes.

The groundwater samples were submitted to Eurofins TestAmerica Laboratories, Inc. in North Canton, Ohio.

SECTION 6 – OTHER REQUIRED INFORMATION:

1. Signed Certification Statement per OAC Rules 3745-50-58(K) and 3745-50-42

OHIO EPA

SUPPLEMENTARY ANNUAL REPORT

FOR 2019 GROUNDWATER

MONITORING INFORMATION

February 25, 2020

Prepared by Arcadis

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

_____

Pamela L. Barnett

Cleanup Manager

RACER Trust

2. Groundwater Flow Data

Groundwater levels for the upper aquifer well network associated with the closed lagoons were measured on July 9, 2019. Groundwater levels were measured in accordance with procedures defined in the Site-Wide Groundwater Monitoring Plan (Arcadis G&M, Inc. 2002), Standard Operating Procedure (SOP) #4.

Monitoring results indicate that groundwater flow is generally from northeast to southwest. The general groundwater flow conditions for 2019 are consistent with historical groundwater flow conditions documented in the previous annual groundwater monitoring reports. The potentiometric surface for the closed North Settling Lagoon and closed South Settling Lagoon is illustrated in **Figures E-1** and **E-2**, respectively.

Horizontal hydraulic gradient values within the upper aquifer in 2019 average 9.0 x 10^{-4}, based on the two well pairs presented in Table 9 of the Main Report. Using the range in hydraulic conductivity values

measured for the sand and gravel facies of the upper aquifer (180 to 3,500 feet/day), long-term site-wide horizontal hydraulic gradient of 4.7 x 10^{-4}, and effective porosity of 10%, the estimated advective groundwater velocity ranges from 0.8 to 16 feet/day for the majority of the upper aquifer (Arcadis, 2012).

3. Sampling Data and 4. Lab Data

In 2019, the following wells were sampled to assess the groundwater monitoring program objectives:

- Closed North and South Settling Lagoons:
  - Closed North Settling Lagoon: HR-4, W-2-N, W-3-N, and W-4-N
  - Closed South Settling Lagoon: HR-17, W-2-S, W-3-S, and W-4-S

A summary of the 2019 groundwater monitoring activities, including the number of monitoring wells and analytical parameters, is presented on Table 1 in the Main Report. Well construction data for the wells used in the program are presented in Table 6 in the Main Report.

Groundwater samples were collected from the specified wells using the low-flow methodology and following procedures outlined in SOP #21 (Arcadis G&M, Inc., 2002). Field parameters including pH, specific conductance, temperature, oxidation/reduction potential, and dissolved oxygen were measured during purging of each well using a multi-parameter groundwater quality meter connected to a flow-through cell (Appendix C in the Main Report). The groundwater sampling details are provided on the applicable sampling forms included in **Attachment E-1**. The analytical results are summarized below and are included in this report as **Attachment E-2** and in Table 3 of the Main Report.

The groundwater samples were collected and managed under standard chain-of-custody procedures and validated in accordance with the approved Supplemental RFI Work Plan and the RFI Quality Assurance Project Plan (Geraghty & Miller, Inc. 1997) and as presented in the draft Amended Quality Assurance Project Plan (Arcadis, Inc. 2011). The data quality assessment was completed on November 5, 2019 for all samples collected in July 2019 during the annual groundwater sampling event. The review was conducted as a Tier III evaluation and included review of data package completeness as required under U.S. EPA Region III M3 validation. No problems were identified during the data review. The data validation report is provided as **Attachment E-3,** historical data table as **Attachment E-4**, and laboratory results as **Attachment E-4**.

Closed North Settling Lagoon

- Concentrations of site-specific VOCs were detected at relatively low concentrations or below reporting limits in monitoring wells HR-4, W-2-N, and W-3-N in 2019.
- Concentrations of PCE and vinyl chloride in monitoring well W-4-N have been relatively low or below reporting limits since 1999. TCE had a peak concentration of 15 µg/L in 2009 and has remained relatively consistent, with a concentration of 9.2 µg/L in 2019. Concentrations of cis-1,2-DCE have also remained relatively consistent with a concentration of 6.6 µg/L in 2019. The other site-specific VOCs were detected at relatively low concentrations or below reporting limits.

Closed South Settling Lagoon

- Concentrations of PCE in monitoring well HR-17 have been relatively consistent since 2011 with a concentration of 150 µg/L in 2019. Concentrations of the other site-specific VOCs were detected at relatively low concentrations or below reporting limits in monitoring well HR-17.

- Concentrations of PCE in monitoring well W-2-S were relatively consistent prior to 2019, however, the 2019 concentration (20 µg/L) was an order of magnitude greater than the 2018 concentration (2 µg/L). All other concentrations of site-specific VOCs at W-2-S were detected at relatively low concentrations or below reporting limits in 2019.
- The PCE and TCE concentrations at W-3-S in 2019 were detected at 81 µg/L and 5.6 µg/L, respectively. All other site-specific VOCs were detected at relatively low concentrations or below reporting limits in 2019.
- The PCE and TCE concentrations detected at W-4-S in 2019 were at 70 µg/L and 33 µg/L, respectively. All other site-specific VOCs were detected at relatively low concentrations or below reporting limits in 2019.

5. Tables

The statistical results described in the below Section 7 are provided as **Tables E-1** and **E-2**.

6. Maps

The position of the wells relative to the lagoons potentiometric surface for the closed North Settling Lagoon and closed South Settling Lagoon is illustrated in **Figures E-1** and **E-2**, respectively.

7. Calculations

Calculations are not applicable.

SECTION 7 STATISTICAL EVALUATION

Methods

The 2019 groundwater monitoring program was completed to meet the objectives of RCRA corrective action and the post-closure groundwater monitoring requirements for the closed lagoons. The program monitors potentially significant contributions of hazardous waste constituents to existing groundwater quality from the closed lagoons. To determine if the closed lagoons may be significant contributors of hazardous waste constituents to existing groundwater concentrations, monitoring data collected from the designated post-closure monitoring wells located downgradient of each of the closed lagoons are evaluated for temporal trends. This assessment includes, as an initial approach, the application of linear regression to determine if the concentration data for site-specific VOCs suggests a strong positive correlation with time as indicated by the coefficient of determination (R^2). Further statistical assessment of these well constituent concentrations was performed using the Mann-Kendall trend test and the Sen's slope estimator test (**Table E-1**).

Results

Data considered in the evaluation included results through the July 2019 monitoring event and data ranging back to the initial post-closure monitoring event conducted in November 2001. Current and historical data used in the statistical analysis is included in **Attachment E-4**. Laboratory reports are included as **Attachment E-5**. For the Mann-Kendall trend analysis, values below the reporting limit were replaced by a common value lower than the minimum detected value equal to half the minimum reporting limit for each dataset (USEPA, 2009). If half the minimum reporting limit was greater than the minimum detected value, then half the minimum detected value was assigned. This non-detect replacement ensures that any pair of tied values or any pair of non-detects is simply given a score of zero in the calculation of the Mann-Kendall

statistic *S*. For consistency in data analysis, the same substitution method is used for the Sen's slope estimator and linear regression analyses. Field duplicate results were not included.

As proposed in the Site-Wide Groundwater Monitoring Plan (Arcadis G&M, Inc., 2002), post-closure monitoring data collected from those wells assigned to the closed North and South Settling Lagoons were reviewed for temporal trends. Summary statistics and results from the statistical trend tests for each dataset are presented in **Table E-1**. A summary matrix of trend test results is presented in **Table E-2**. The data plots for key constituents are provided on **Figure E-3** for the closed North Settling Lagoon (NSL) and **Figure E-4** for the closed South Settling Lagoon (SSL). Individual time series plots for each dataset together with results from the Mann-Kendall and Sen's slope estimator trend tests are presented in **Figures E-5 to E-23**.

North Settling Lagoon

For the wells used to assess conditions at the North Settling Lagoon, the linear regression analysis suggest increasing concentrations of 1,1-DCA and trans-1,2-DCE in downgradient well W-4-N (**Figures E-6** and **E-9,** respectively). As detailed in **Table E-1**, the slope is positive, and the linear regression had a coefficient of determination (R^2) greater than or nearly equal to 0.5. Further assessment of these trends was performed using the Mann-Kendall trend test. The results of this test indicate a statistically significant increasing trend for the 1,1-DCA and trans-1,2-DCE concentrations in downgradient well W-4-N. These increasing trends are also confirmed by the Sen's slope estimator trend test. Concentrations of trans-1,2-DCE were much less than the applicable maximum contaminant level (MCL) (no MCL is available for 1,1-DCA). Increasing trends were not observed in downgradient monitoring wells W-2-N and W-3-N.

In the upgradient well HR-04, increasing trends were identified for 1,1,1-TCA and cis-1,2-DCE by the Mann-Kendall trend test (**Figures E-5 and E-7**, respectively). The magnitude of these trends was statistically significant for 1,1,1-TCA and not statistically significant for cis-1,2-DCE using the Sen's slope estimator trend test. The R^2 was greater than 0.5 for 1,1,1-TCA and cis-1,2-DCE. Concentrations of all three constituents were significantly less than the MCL, where an MCL was available.

In summary, the closed North Settling Lagoon data indicate a statistically significant increasing trend in 1,1-DCA and trans-1,2-DCE in downgradient monitoring well W-4-N. Several observations suggest a source (upgradient) other than the closed North Settling Lagoon for 1,1-DCA and trans-1,2-DCE in monitoring well W-4-N:

- The absence of concentrations of trans-1,2-DCE greater than MCLs and the low-level detection of 1,1-DCA (less than 7.6 µg/L with no MCL available).
- The fact that these constituents (1,1-DCA and trans-1,2-DCE) are daughter products of VOCs that have been detected upgradient of the closed North Settling Lagoon.

South Settling Lagoon

For the wells used to assess conditions at the closed South Settling Lagoon, increasing trends were identified in the four wells for at least two to five of the following five constituents: 1,1-DCA, cis-1,2-DCE, trans-1,2-DCE, PCE, and TCE (**Table E-1** and **Figure E-4**).

- **Upgradient well HR-17**. A statistically significant increasing trend for PCE was identified with both the Mann-Kendall and Sen's slope estimator trend tests, and the R^2 was greater than 0.5. PCE concentrations over the past five sampling events ranged from 150 µg/L to 180 µg/L which were greater than the MCL of 5 µg/L (**Figure E-15**).

- **W-2-S**. A statistically significant increasing trend for cis-1,2-DCE was identified with both the Mann-Kendall and Sen's slope estimator trend tests, but the R^2 was less than 0.5. Statistically significant increasing trends for trans-1,2-DCE and PCE were identified with the Mann-Kendall, but not confirmed by the Sen's slope estimator trend tests – the R^2 values were also less than 0.5. Concentrations for cis-1,2-DCE and trans-1,2-DCE were both less than the MCL (**Figures E-12** and **E-19**, respectively). The most recent concentration for PCE was greater than the MCL (**Figure E-16**)

- **W-3-S**. Statistically significant increasing trends for cis-1,2-DCE, PCE, and TCE were identified by the Mann-Kendall and Sen's slope estimator trend tests, and the R^2 was greater than 0.5 for cis-1,2-DCE and PCE (**Figures E-13** and **E-17**, respectively), but was less than 0.5 for TCE (**Figure E-22**). Statistically significant increasing trends for 1,1-DCA and trans-1,2-DCE were identified with the Mann-Kendall, but not confirmed by the Sen's slope estimator trend tests, and the R^2 was less than 0.5 (**Figures E-10** and **E-20**, respectively). Concentrations for all constituents but PCE and TCE were less than the applicable MCL. Concentrations of PCE over the past five sampling events ranged from 19 to 81 µg/L and were greater than the MCL of 5 µg/L. Concentrations of TCE over the past five sampling events ranged from 5.6 to 97 µg/L and were greater than the MCL of 5 µg/L.

- **W-4-S**. A statistically significant increasing trend for 1,1-DCA (**Figure E-11**), cis-1,2-DCE (**Figure E-14**), PCE (**Figure E-18**), trans-1,2-DCE (**Figure E-21**), and TCE (**Figure E-23**) was identified with both the Mann-Kendall and Sen's slope estimator trend tests, and the R^2 was greater than 0.5 each of these constituents except for trans-1,2-DCE . Concentrations for all constituents but PCE and TCE were less than the applicable MCL. Concentrations of PCE over the past five sampling events ranged from 39 to 74 µg/L and were greater than the MCL of 5 µg/L. Concentrations of TCE over the past five sampling events ranged from 33 to 72 µg/L and were greater than the MCL of 5 µg/L.

The detected concentrations for PCE and TCE in the upgradient monitoring well HR-17 in the 2019 sampling event were 150 µg/L and 1.7 µg/L, respectively. A statistically significant increasing trend for PCE was identified by the Mann-Kendall and Sen's slope estimator trend tests, and the R^2 was greater than 0.5 (**Figure E-15**). A statistically significant increasing trend for TCE was not identified by the Mann-Kendall trend test or the Sen's slope estimator trend tests – the R^2 was less than 0.5 (**Table E-1**). The observed concentration increase identified in downgradient monitoring well W-4-S for PCE and TCE appears to correlate with the concentrations and increasing trends also observed in upgradient well HR-17. The correlations between concentrations in upgradient well HR-17 and downgradient well W-4-S for TCE and PCE were tested statistically using Pearson correlation coefficients and were found to be statistically correlated at the 5% significance level (**Figure E-24**). This correlation suggests a source (upgradient) other than the closed South Settling Lagoon for the TCE and PCE increases. Although the concentrations for cis-1,2-DCE, trans-1,2-DCE, and 1,1-DCA in wells W-4-S and HR-17 are not statistically correlated, the concentrations are still less than applicable drinking water standards. Further, the presence of daughter products 1,1-DCA, cis-1,2-DCE, and trans-1,2-DCE is expected from the natural attenuation processes.

CONCLUSIONS AND RECOMMENDATIONS

In conclusion, the monitoring of the closed North and South Settling Lagoons showed that the closed lagoons do not appear to be contributing hazardous waste constituents to existing groundwater concentrations in the area. Based on these results, it is proposed that the 2020 groundwater monitoring program remain consistent with the sampling program for 2019.

Tables

Table E-1 – Summary Statistics and Trend Results

Table E-2 – Matrix of Trend Results

Figures

Figure E-1 – Potentiometric Surface – North Settling Lagoon (Upper Aquifer) July 2019

Figure E-2 – Potentiometric Surface – South Settling Lagoon (Upper Aquifer) July 2019

Figure E-3 – North Settling Lagoon (NSL) Data Plots for Key Constituents

Figure E-4 – South Settling Lagoon (SSL) Data Plots for Key Constituents

Figures E-5 through E-23 – Temporal Data Plots of Select Concentrations

Figure E-24 – PCE and TCE Concentrations in SSL Upgradient vs. Downgradient Wells

Attachments

Attachment E-1 – Groundwater Sampling Forms

Attachment E-2 – Ohio EPA eBusiness Excel Worksheet

Attachment E-3 – Laboratory Data Review Report

Attachment E-4 – Groundwater VOC Analytical Results for North and South Settling Lagoon Wells from 1999 to 2019

Attachment E-5 – Laboratory Analytical Reports

References

Arcadis, Inc. 2012. Corrective Measures Proposal, RACER Trust, Moraine, Ohio. December 31, 2012.

Arcadis, Inc. 2011. Draft Amended Quality Assurance Project Plan for RCRA Corrective Action, RACER Trust, Moraine, Ohio. November 28, 2011.

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Geraghty & Miller, Inc. 1997. Supplemental RFI Work Plan, General Motors Powertrain Group Moraine Engine Plant and General Motors Truck Group Moraine Assembly Plant, Moraine, Ohio. July 1997.

Ohio EPA, 2019. Ohio EPA Report Review – 2018 Groundwater Monitoring Report Dated February 28, 2018. September 24, 2019.

U.S. EPA. 2009. Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities - Unified Guidance.

TABLES

TABLE E-1
Summary Statistics and Trend Results
RACER Trust
Moraine, Ohio

Well ID	Up or Down Gradient	Analyte	Figure	Date Range	FOD	Detected Results Summary (µg/L)			MCL (µg/L)	Linear Correlation R^2	Mann-Kendall Test			Sen's Estimator of Slope	
						Range	Mean	SD			Result	P-Value	S Value	Result	Slope (Units/Day)
HR-04	North	1,1,1-Trichloroethane	E-5	11/01 - 07/19	9 / 19	0.17 - 2.2	1.1	0.82	200	**0.66**	UP	<0.001	100	UP	0.000204
W-2-N	North	1,1,1-Trichloroethane	--	11/01 - 07/19	5 / 19	0.25 - 0.48	0.34	0.093	200	0.0236	NST	0.341	-10	NT	0
W-3-N	North	1,1,1-Trichloroethane	--	11/01 - 07/19	0 / 19	--	--	--	200	--	--	--	--	--	--
W-4-N	North	1,1,1-Trichloroethane	--	11/01 - 07/19	8 / 19	0.26 - 0.47	0.38	0.067	200	0.376	DWN	0.008	-62	NT	-0.0000228
HR-04	North	1,1-Dichloroethane	--	11/01 - 07/19	16 / 19	0.77 - 5.5	2.8	1.5	--	0.055	NST	0.056	46	NT	0.000196
W-2-N	North	1,1-Dichloroethane	--	11/01 - 07/19	8 / 19	0.19 - 0.36	0.29	0.056	--	0.227	DWN	0.025	-51	NT	0
W-3-N	North	1,1-Dichloroethane	--	11/01 - 07/19	0 / 19	--	--	--	--	--	--	--	--	--	--
W-4-N	North	1,1-Dichloroethane	E-6	11/01 - 07/19	19 / 19	0.89 - 7.6	3.4	2.4	--	**0.779**	UP	<0.001	131	UP	0.000937
HR-04	North	1,1-Dichloroethene	--	11/01 - 07/19	1 / 19	0.19 - 0.19	0.19	0	7	0.146	NST	0.060	18	NT	0
W-2-N	North	1,1-Dichloroethene	--	11/01 - 07/19	0 / 19	--	--	--	7	--	--	--	--	--	--
W-3-N	North	1,1-Dichloroethene	--	11/01 - 07/19	0 / 19	--	--	--	7	--	--	--	--	--	--
W-4-N	North	1,1-Dichloroethene	--	11/01 - 07/19	0 / 19	--	--	--	7	--	--	--	--	--	--
HR-04	North	Benzene	--	11/01 - 07/19	0 / 19	--	--	--	5	--	--	--	--	--	--
W-2-N	North	Benzene	--	11/01 - 07/19	0 / 19	--	--	--	5	--	--	--	--	--	--
W-3-N	North	Benzene	--	11/01 - 07/19	0 / 19	--	--	--	5	--	--	--	--	--	--
W-4-N	North	Benzene	--	11/01 - 07/19	0 / 19	--	--	--	5	--	--	--	--	--	--
HR-04	North	cis-1,2-Dichloroethene	E-7	11/01 - 07/19	10 / 19	0.23 - 0.56	0.36	0.11	70	**0.511**	UP	0.001	83	NT	0.0000505
W-2-N	North	cis-1,2-Dichloroethene	--	11/01 - 07/19	19 / 19	0.89 - 2.8	1.6	0.49	70	0.226	NST	0.089	39	NT	0.0000588
W-3-N	North	cis-1,2-Dichloroethene	--	11/01 - 07/19	19 / 19	14 - 160	71.3	48.1	70	0.885	DWN	<0.001	-155	DWN	-0.0219
W-4-N	North	cis-1,2-Dichloroethene	E-8	11/01 - 07/19	19 / 19	1.6 - 14	7	3.7	70	0.416	UP	0.005	74	UP	0.00116
HR-04	North	Ethylbenzene	--	11/01 - 07/19	0 / 19	--	--	--	700	--	--	--	--	--	--
W-2-N	North	Ethylbenzene	--	11/01 - 07/19	0 / 19	--	--	--	700	--	--	--	--	--	--
W-3-N	North	Ethylbenzene	--	11/01 - 07/19	0 / 19	--	--	--	700	--	--	--	--	--	--
W-4-N	North	Ethylbenzene	--	11/01 - 07/19	0 / 19	--	--	--	700	--	--	--	--	--	--
HR-04	North	Tetrachloroethene	--	11/01 - 07/19	14 / 19	0.16 - 1.3	0.46	0.3	5	0.559	DWN	<0.001	-109	DWN	-0.0000916
W-2-N	North	Tetrachloroethene	--	11/01 - 07/19	1 / 19	0.31 - 0.31	0.31	0	5	0.0681	NST	0.158	-12	NT	0
W-3-N	North	Tetrachloroethene	--	11/01 - 07/19	8 / 19	0.52 - 9	2.4	3	5	0.276	DWN	0.021	-53	NT	0
W-4-N	North	Tetrachloroethene	--	11/01 - 07/19	17 / 19	0.26 - 1.7	0.78	0.35	5	0.506	DWN	<0.001	-92	DWN	-0.000134
HR-04	North	Toluene	--	11/01 - 07/19	0 / 19	--	--	--	1000	--	--	--	--	--	--
W-2-N	North	Toluene	--	11/01 - 07/19	1 / 19	0.28 - 0.28	0.28	0	1000	0.0168	NST	0.324	-6	NT	0
W-3-N	North	Toluene	--	11/01 - 07/19	0 / 19	--	--	--	1000	--	--	--	--	--	--
W-4-N	North	Toluene	--	11/01 - 07/19	0 / 19	--	--	--	1000	--	--	--	--	--	--
HR-04	North	trans-1,2-Dichloroethene	--	11/01 - 07/19	0 / 19	--	--	--	100	--	--	--	--	--	--
W-2-N	North	trans-1,2-Dichloroethene	--	11/01 - 07/19	4 / 19	0.18 - 0.28	0.22	0.043	100	0.0789	NST	0.229	16	NT	0
W-3-N	North	trans-1,2-Dichloroethene	--	11/01 - 07/19	18 / 19	0.23 - 2.2	0.96	0.59	100	0.518	DWN	<0.001	-120	DWN	-0.000257
W-4-N	North	trans-1,2-Dichloroethene	E-9	11/01 - 07/19	16 / 19	0.19 - 1.3	0.64	0.32	100	**0.542**	UP	<0.001	105	UP	0.000120
HR-04	North	Trichloroethene	--	11/01 - 07/19	16 / 19	0.27 - 1	0.41	0.21	5	0.482	DWN	0.002	-81	DWN	-0.0000484
W-2-N	North	Trichloroethene	--	11/01 - 07/19	14 / 19	0.2 - 1.9	1	0.52	5	0.000177	NST	0.402	-8	NT	0
W-3-N	North	Trichloroethene	--	11/01 - 07/19	2 / 19	1.7 - 2.1	1.9	0.28	5	0.255	DWN	0.017	-33	NT	0
W-4-N	North	Trichloroethene	--	11/01 - 07/19	19 / 19	6.1 - 15	9.3	2.4	5	0.000918	NST	0.376	10	NT	0.0000691
HR-04	North	Vinyl chloride	--	11/01 - 07/19	0 / 19	--	--	--	2	--	--	--	--	--	--
W-2-N	North	Vinyl chloride	--	11/01 - 07/19	0 / 19	--	--	--	2	--	--	--	--	--	--
W-3-N	North	Vinyl chloride	--	11/01 - 07/19	19 / 19	0.81 - 9.6	3.8	2.8	2	0.776	DWN	<0.001	-130	DWN	-0.00114
W-4-N	North	Vinyl chloride	--	11/01 - 07/19	9 / 19	0.18 - 0.96	0.51	0.24	2	0.425	DWN	0.001	-80	NT	-0.0000791
HR-04	North	Xylene (total)	--	11/01 - 07/19	0 / 19	--	--	--	10000	--	--	--	--	--	--
W-2-N	North	Xylene (total)	--	11/01 - 07/19	0 / 19	--	--	--	10000	--	--	--	--	--	--
W-3-N	North	Xylene (total)	--	11/01 - 07/19	0 / 19	--	--	--	10000	--	--	--	--	--	--
W-4-N	North	Xylene (total)	--	11/01 - 07/19	0 / 19	--	--	--	10000	--	--	--	--	--	--

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TABLE E-1
Summary Statistics and Trend Results
RACER Trust
Moraine, Ohio

Well ID	Up or Down Gradient	Analyte	Figure	Date Range	FOD	Detected Results Summary (µg/L)			MCL (µg/L)	Linear Correlation R^2	Mann-Kendall Test			Sen's Estimator of Slope	
						Range	Mean	SD			Result	P-Value	S Value	Result	Slope (Units/Day)
Table E-1 continued															
HR-17	South	1,1,1-Trichloroethane	--	11/01 - 07/19	7 / 19	0.39 - 7.4	2.5	2.6	200	0.29	NST	0.052	41	NT	0
W-2-S	South	1,1,1-Trichloroethane	--	11/01 - 07/19	18 / 19	0.6 - 1.8	1.4	0.33	200	0.366	DWN	0.012	-65	NT	-0.0000917
W-3-S	South	1,1,1-Trichloroethane	--	11/01 - 07/19	17 / 19	0.49 - 2.5	1.4	0.76	200	0.322	DWN	0.005	-75	DWN	-0.000272
W-4-S	South	1,1,1-Trichloroethane	--	11/01 - 07/19	23 / 23	0.95 - 2.9	1.7	0.48	200	0.238	DWN	0.007	-94	DWN	-0.000149
HR-17	South	1,1-Dichloroethane	--	11/01 - 07/19	15 / 19	0.6 - 2.2	1.3	0.58	--	0.0139	NST	0.362	11	NT	0.00000300
W-2-S	South	1,1-Dichloroethane	--	11/01 - 07/19	19 / 19	0.23 - 1.3	0.96	0.27	--	0.143	NST	0.052	-47	NT	-0.0000459
W-3-S	South	1,1-Dichloroethane	E-10	11/01 - 07/19	10 / 19	0.21 - 1.2	0.64	0.33	--	0.42	UP	0.002	78	NT	0.0000940
W-4-S	South	1,1-Dichloroethane	E-11	11/01 - 07/19	23 / 23	0.87 - 2.7	1.6	0.42	--	**0.553**	UP	<0.001	145	UP	0.000164
HR-17	South	1,1-Dichloroethene	--	11/01 - 07/19	1 / 19	0.54 - 0.54	0.54	0	7	0.146	NST	0.060	18	NT	0
W-2-S	South	1,1-Dichloroethene	--	11/01 - 07/19	0 / 19	--	--	--	7	--	--	--	--	--	--
W-3-S	South	1,1-Dichloroethene	--	11/01 - 07/19	0 / 19	--	--	--	7	--	--	--	--	--	--
W-4-S	South	1,1-Dichloroethene	--	11/01 - 07/19	1 / 23	0.21 - 0.21	0.21	0	7	0.00346	NST	0.530	0	NT	0
HR-17	South	Benzene	--	11/01 - 07/19	0 / 19	--	--	--	5	--	--	--	--	--	--
W-2-S	South	Benzene	--	11/01 - 07/19	1 / 19	0.43 - 0.43	0.43	0	5	0.00138	NST	0.464	-2	NT	0
W-3-S	South	Benzene	--	11/01 - 07/19	0 / 19	--	--	--	5	--	--	--	--	--	--
W-4-S	South	Benzene	--	11/01 - 07/19	0 / 23	--	--	--	5	--	--	--	--	--	--
HR-17	South	cis-1,2-Dichloroethene	--	11/01 - 07/19	16 / 19	1.1 - 7.1	2.7	1.6	70	0.223	DWN	0.019	-60	NT	-0.000372
W-2-S	South	cis-1,2-Dichloroethene	E-12	11/01 - 07/19	18 / 19	0.29 - 2.4	1.1	0.56	70	0.23	UP	0.012	65	UP	0.000136
W-3-S	South	cis-1,2-Dichloroethene	E-13	11/01 - 07/19	12 / 19	0.33 - 2.6	1.3	0.76	70	**0.57**	UP	<0.001	101	UP	0.000215
W-4-S	South	cis-1,2-Dichloroethene	E-14	11/01 - 07/19	23 / 23	3.3 - 22	7.8	4.7	70	**0.689**	UP	<0.001	205	UP	0.00168
HR-17	South	Ethylbenzene	--	11/01 - 07/19	0 / 19	--	--	--	700	--	--	--	--	--	--
W-2-S	South	Ethylbenzene	--	11/01 - 07/19	0 / 19	--	--	--	700	--	--	--	--	--	--
W-3-S	South	Ethylbenzene	--	11/01 - 07/19	0 / 19	--	--	--	700	--	--	--	--	--	--
W-4-S	South	Ethylbenzene	--	11/01 - 07/19	0 / 23	--	--	--	700	--	--	--	--	--	--
HR-17	South	Tetrachloroethene	E-15	11/01 - 07/19	19 / 19	3.3 - 180	102	56.7	5	**0.824**	UP	<0.001	127	UP	0.0263
W-2-S	South	Tetrachloroethene	E-16	11/01 - 07/19	12 / 19	0.31 - 20	2.1	5.6	5	0.174	UP	0.022	57	NT	0.0000424
W-3-S	South	Tetrachloroethene	E-17	11/01 - 07/19	19 / 19	0.44 - 81	19.7	28.3	5	**0.622**	UP	<0.001	131	UP	0.00650
W-4-S	South	Tetrachloroethene	E-18	11/01 - 07/19	23 / 23	13 - 74	35.6	19.4	5	**0.758**	UP	<0.001	189	UP	0.00863
HR-17	South	Toluene	--	11/01 - 07/19	0 / 19	--	--	--	1000	--	--	--	--	--	--
W-2-S	South	Toluene	--	11/01 - 07/19	1 / 19	0.25 - 0.25	0.25	0	1000	0.092	NST	0.118	-14	NT	0
W-3-S	South	Toluene	--	11/01 - 07/19	0 / 19	--	--	--	1000	--	--	--	--	--	--
W-4-S	South	Toluene	--	11/01 - 07/19	1 / 23	0.25 - 0.25	0.25	0	1000	0.0718	NST	0.100	-18	NT	0
HR-17	South	trans-1,2-Dichloroethene	--	11/01 - 07/19	11 / 19	0.46 - 1.6	0.96	0.37	100	0.235	DWN	0.017	-59	NT	-0.0000887
W-2-S	South	trans-1,2-Dichloroethene	E-19	11/01 - 07/19	5 / 19	0.3 - 0.47	0.37	0.069	100	0.296	UP	0.005	58	NT	0
W-3-S	South	trans-1,2-Dichloroethene	E-20	11/01 - 07/19	6 / 19	0.19 - 0.59	0.39	0.19	100	0.127	UP	0.030	45	NT	0
W-4-S	South	trans-1,2-Dichloroethene	E-21	11/01 - 07/19	23 / 23	0.43 - 2.1	1.2	0.34	100	0.435	UP	<0.001	122	UP	0.000124
HR-17	South	Trichloroethene	--	11/01 - 07/19	18 / 19	0.92 - 160	40.3	51	5	0.11	NST	0.092	39	NT	0.00410
W-2-S	South	Trichloroethene	--	11/01 - 07/19	19 / 19	2.8 - 23	6.5	4.1	5	0.0361	NST	0.300	16	NT	0.000122
W-3-S	South	Trichloroethene	E-22	11/01 - 07/19	19 / 19	1.5 - 97	12.4	22.6	5	0.191	UP	<0.001	97	UP	0.00109
W-4-S	South	Trichloroethene	E-23	11/01 - 07/19	23 / 23	8.9 - 72	25.5	17.9	5	**0.619**	UP	<0.001	181	UP	0.00531
HR-17	South	Vinyl chloride	--	11/01 - 07/19	0 / 19	--	--	--	2	--	--	--	--	--	--
W-2-S	South	Vinyl chloride	--	11/01 - 07/19	0 / 19	--	--	--	2	--	--	--	--	--	--
W-3-S	South	Vinyl chloride	--	11/01 - 07/19	0 / 19	--	--	--	2	--	--	--	--	--	--
W-4-S	South	Vinyl chloride	--	11/01 - 07/19	0 / 23	--	--	--	2	--	--	--	--	--	--
HR-17	South	Xylene (total)	--	11/01 - 07/19	0 / 19	--	--	--	10000	--	--	--	--	--	--
W-2-S	South	Xylene (total)	--	11/01 - 07/19	0 / 19	--	--	--	10000	--	--	--	--	--	--
W-3-S	South	Xylene (total)	--	11/01 - 07/19	0 / 19	--	--	--	10000	--	--	--	--	--	--
W-4-S	South	Xylene (total)	--	11/01 - 07/19	0 / 23	--	--	--	10000	--	--	--	--	--	--

TABLE E-1
Summary Statistics and Trend Results
RACER Trust
Moraine, Ohio

Abbreviations:

--	= insufficient data for calculating statistics (n < 4)	NST	= no significant trend
FOD	= frequency of detection (# detects / # samples)	NT	= no trend
MCL	= maximum contaminant level	DWN	= downward trend
mean	= arithmetic mean	UP	= upward trend
R^2	= linear regression coefficient of determination		
SD	= standard deviation		

Notes:

1. All analytical results are in µg/L. Result values less than 10 are reported to 2 significant figures; values greater than 10 are reported to 3 significant figures. P-values are reported to 3 decimal places.
2. Trend results are presented when at least four samples and one detected value are available.
3. Non-detects were assigned a common value less than the minimum detected value, equal to half the minimum reporting limit (RL) in the dataset (USEPA, 2009). If half the minimum RL was greater than the minimum detected value, then half the minimum detect was assigned.
4. Statistically significant trend defined as having p-value ≤ 0.05, or 95% confidence.
5. Field duplicate results were not included.
6. Statistical testing of the null hypothesis: no significant trend (slope = 0) and the alternative hypothesis: significant trend (slope ≠ 0) with 95% confidence.
7. R^2 values are bolded if R^2>0.5 and MK results shows siginficant upward trend.

Reference:

USEPA. 2009. Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities. Unified Guidance. EPA/530/R-09/007, 2009.

TABLE E-2
Matrix of Trend Results
RACER Trust
Moraine, Ohio

Lagoon:	North											
Well:	HR-04			W-2-N			W-3-N			W-4-N		
VOC Constituent	R^2	MK	SSE	R^2	MK	SSE	R^2	MK	SSE	R^2	MK	SSE
1,1,1-Trichloroethane	>0.5	▲	▲	--	↔	↔	--	ND	ND	--	▼	↔
1,1-Dichloroethane	--	↔	↔	--	▼	↔	--	ND	ND	>0.5	▲	▲
1,1-Dichloroethene	--	↔	↔	--	ND	ND	--	ND	ND	--	ND	ND
Benzene	--	ND	ND	--	ND	ND	--	ND	ND	--	ND	ND
cis-1,2-Dichloroethene	>0.5	▲	↔	--	↔	↔	>0.5	▼	▼	--	▲	▲
Ethylbenzene	--	ND	ND	--	ND	ND	--	ND	ND	--	ND	ND
Tetrachloroethene	>0.5	▼	▼	--	↔	↔	--	▼	↔	>0.5	▼	▼
Toluene	--	ND	ND	--	↔	↔	--	ND	ND	--	ND	ND
trans-1,2-Dichloroethene	--	ND	ND	--	↔	↔	>0.5	▼	▼	>0.5	▲	▲
Trichloroethene	--	▼	▼	--	↔	↔	--	▼	↔	--	↔	↔
Vinyl chloride	--	ND	ND	--	ND	ND	>0.5	▼	▼	--	▼	↔
Xylene (total)	--	ND	ND	--	ND	ND	--	ND	ND	--	ND	ND
Lagoon:	**South**											
Well:	**HR-17**			**W-2-S**			**W-3-S**			**W-4-S**		
VOC Constituent	R^2	MK	SSE	R^2	MK	SSE	R^2	MK	SSE	R^2	MK	SSE
1,1,1-Trichloroethane	--	↔	↔	--	▼	↔	--	▼	▼	--	▼	▼
1,1-Dichloroethane	--	↔	↔	--	↔	↔	--	▲	↔	>0.5	▲	▲
1,1-Dichloroethene	--	↔	↔	--	ND	ND	--	ND	ND	--	↔	↔
Benzene	--	ND	ND	--	↔	↔	--	ND	ND	--	ND	ND
cis-1,2-Dichloroethene	--	▼	↔	--	▲	▲	>0.5	▲	▲	>0.5	▲	▲
Ethylbenzene	--	ND	ND	--	ND	ND	--	ND	ND	--	ND	ND
Tetrachloroethene	>0.5	▲	▲	--	▲	↔	>0.5	▲	▲	>0.5	▲	▲
Toluene	--	ND	ND	--	↔	↔	--	ND	ND	--	↔	↔
trans-1,2-Dichloroethene	--	▼	↔	--	▲	↔	--	▲	↔	--	▲	▲
Trichloroethene	--	↔	↔	--	↔	↔	--	▲	▲	>0.5	▲	▲
Vinyl chloride	--	ND	ND	--	ND	ND	--	ND	ND	--	ND	ND
Xylene (total)	--	ND	ND	--	ND	ND	--	ND	ND	--	ND	ND

Abbreviations:

R^2 = Linear regression coefficient of determination
MK = Mann-Kendall
SSE = Sen's Slope Estimator
-- = R^2 less than 0.5
▲ = Increasing trend (alpha = 0.05)
▼ = Decreasing trend (alpha = 0.05)
ND = 100% Non-detect
↔ = No trend

FIGURES

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LEGEND

UPPER AQUIFER

- UPPER AQUIFER WELL
- DRAINAGE DITCH
- CURRENT BUILDING
- FORMER BUILDING/SITE FEATURE
- PROPERTY BOUNDARY
- POTENTIOMETRIC CONTOUR (FEET AMSL, DASHED WHERE INFERRED)
- GROUNDWATER FLOW DIRECTION

W-4-N — WELL IDENTIFIER
712.30 — GROUNDWATER ELEVATION (FEET AMSL)

Notes:
1. High-resolution orthomosaic developed using imagery collected by Arcadis US via DJI Zenmuse X4S camera mounted to a DJI Inspire 2 UAV during the dates of 10/09/2019-10/10/2019.
2. Additional Aerial Source; DigitalGlobe, dated 8/22/2018, serviced by ESRI World Imagery Service, accessed via ESRI ArcGIS Desktop on 2/20/2020.
3. Groundwater elevations were measured on July 9, 2019.
4. AMSL = Above Mean Sea Level

RACER TRUST
MORAINE, OHIO
2019 GROUNDWATER MONITORING REPORT

CLOSED NORTH SETTLING LAGOON
UPPER AQUIFER
POTENTIOMETRIC SURFACE MAP

ARCADIS Design & Consultancy for natural and built assets

FIGURE
E-1

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LEGEND

UPPER AQUIFER

- UPPER AQUIFER WELL
- FORMER BUILDING/SITE FEATURE
- PROPERTY BOUNDARY
- POTENTIOMETRIC CONTOUR (FEET AMSL)
- GROUNDWATER FLOW DIRECTION

W-4-S — WELL IDENTIFIER
709.11 — GROUNDWATER ELEVATION (FEET AMSL)

Notes:
1. High-resolution orthomosaic developed using imagery collected by Arcadis US via DJI Zenmuse X4S camera mounted to a DJI Inspire 2 UAV during the dates of 10/09/2019-10/10/2019.
2. Additional Aerial Source; DigitalGlobe, dated 8/22/2018, serviced by ESRI World Imagery Service, accessed via ESRI ArcGIS Desktop on 2/20/2020.
3. Groundwater elevations were measured on July 9, 2019.
4. AMSL = Above Mean Sea Level

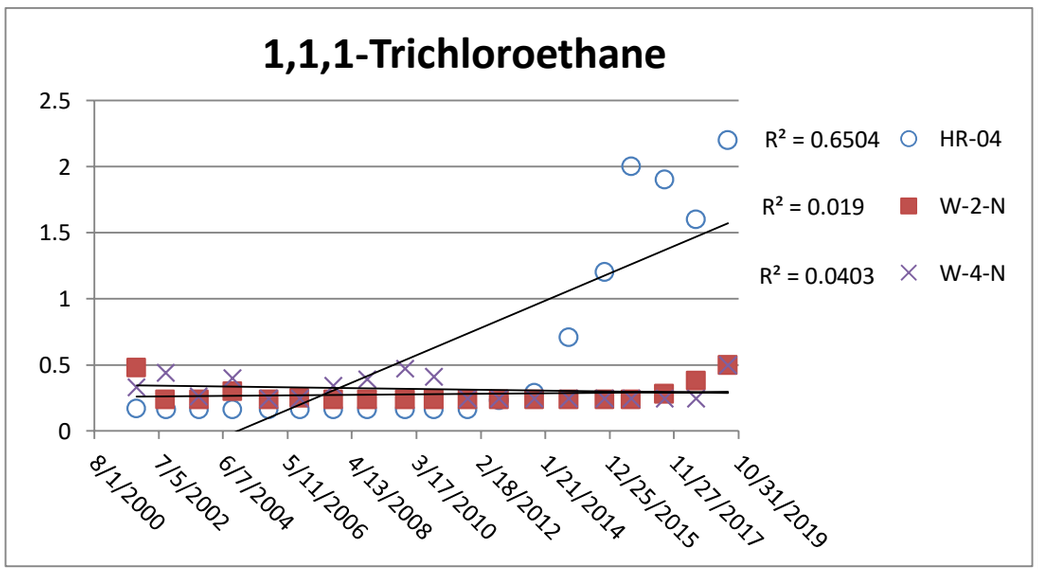
RACER TRUST
MORAINE, OHIO
2019 GROUNDWATER MONITORING REPORT

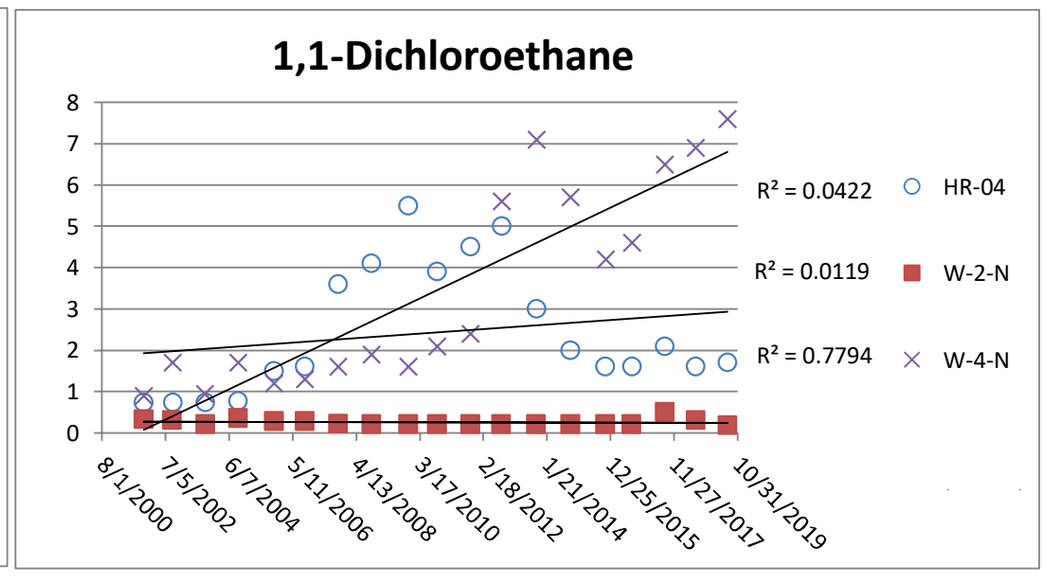
CLOSED SOUTH SETTLING LAGOON
UPPER AQUIFER
POTENTIOMETRIC SURFACE MAP

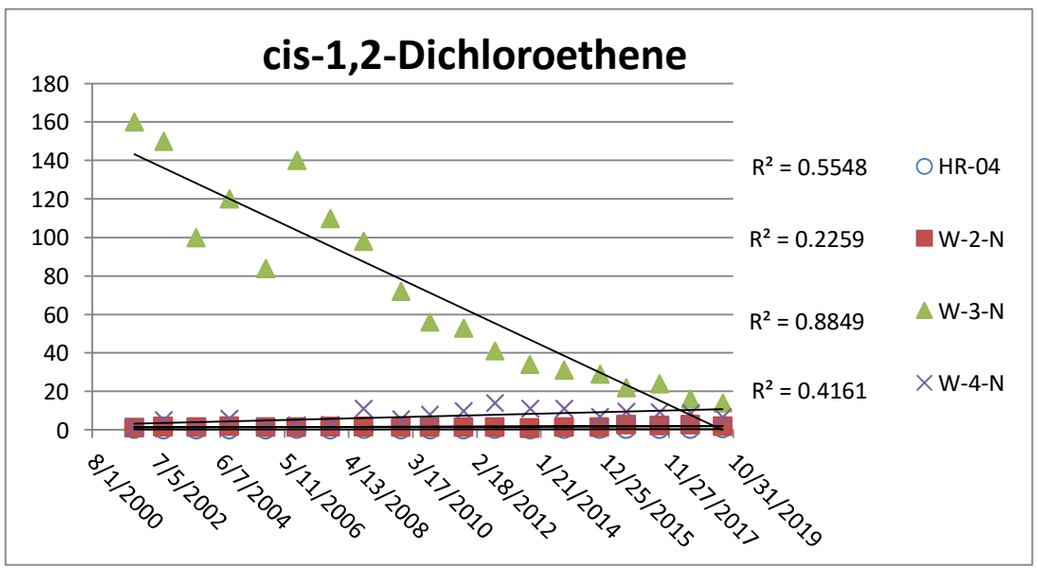
ARCADIS Design & Consultancy for natural and built assets

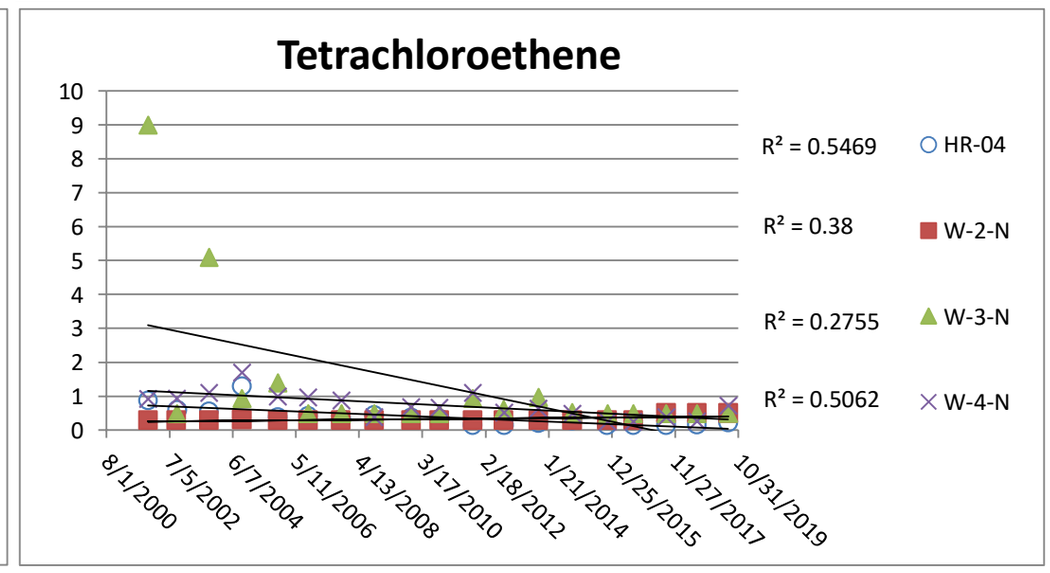
FIGURE
E-2

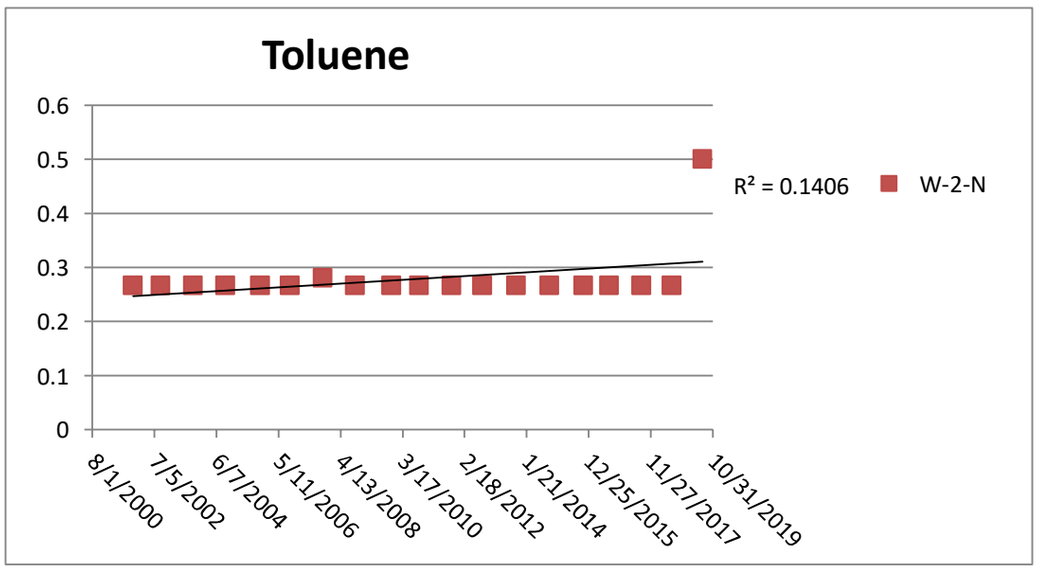
Figure E-3:
North Settling Lagoon

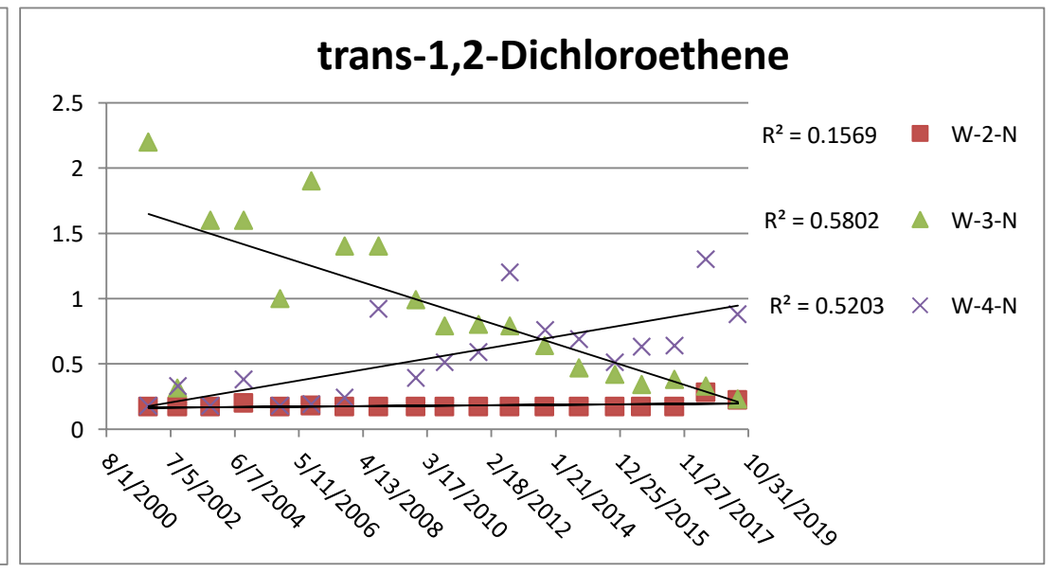


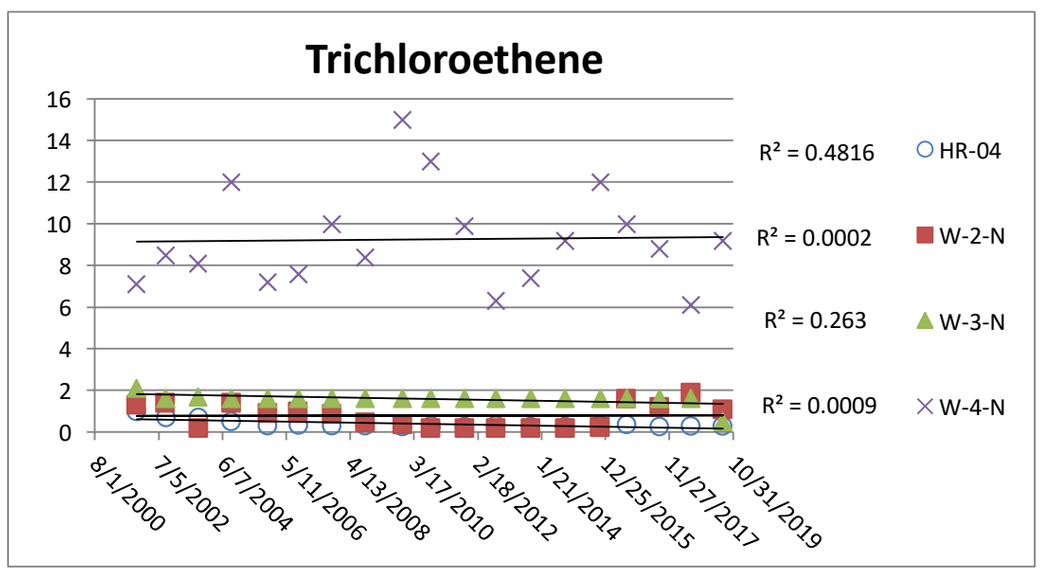


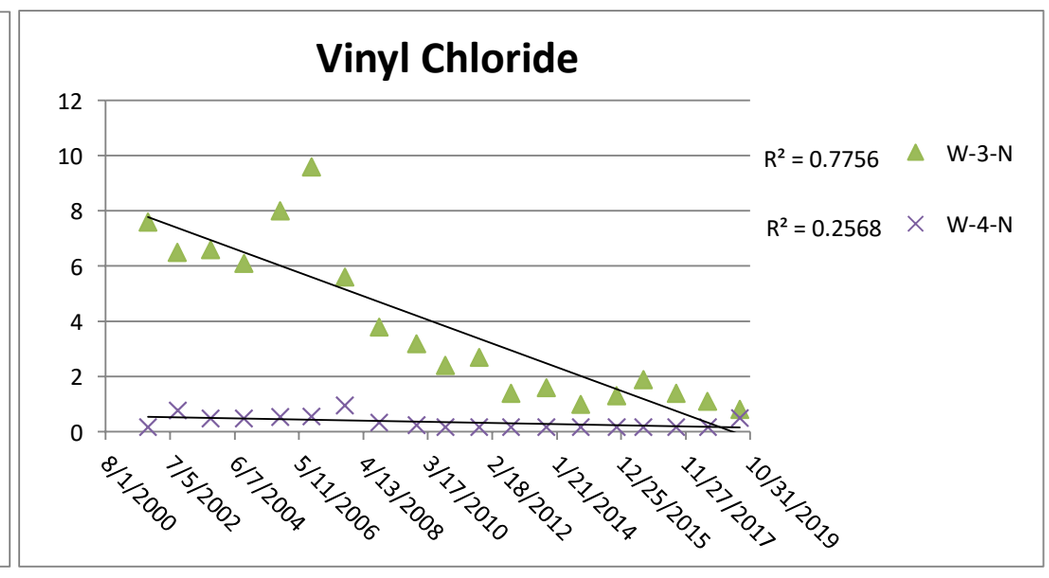






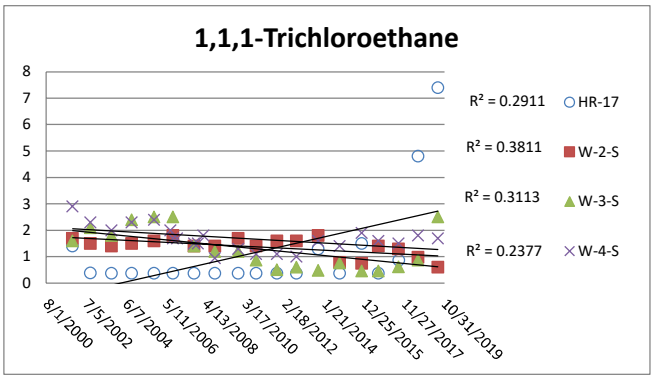


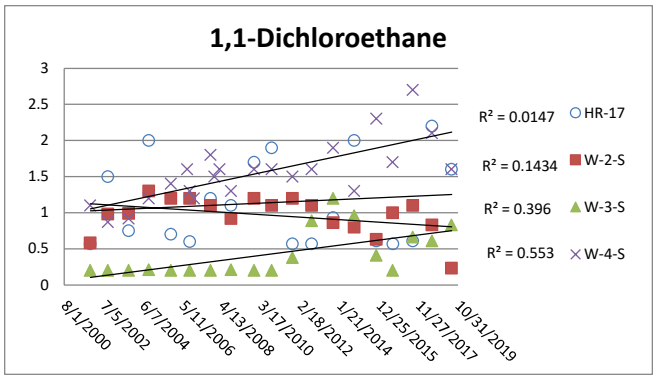


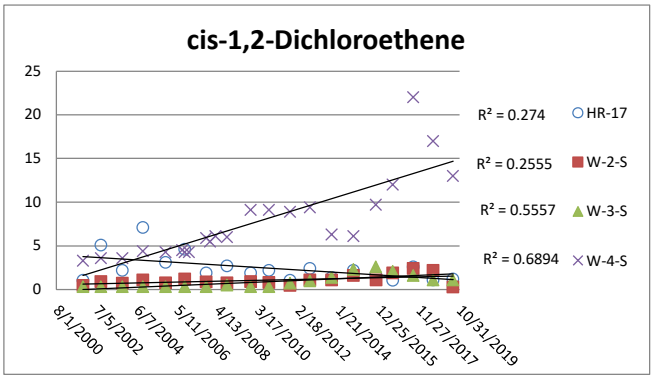


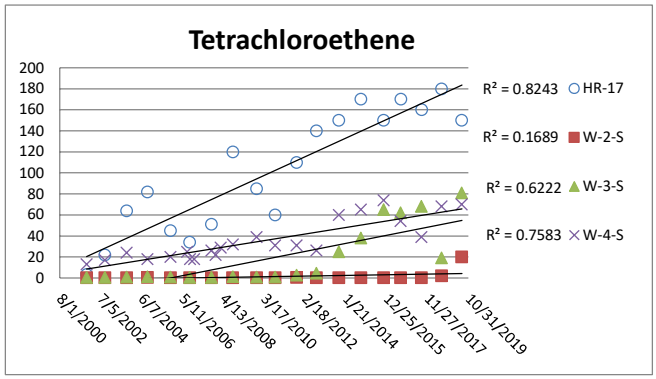
Notes:
All results are in micrograms per liter.
Only datasets with at least one detected value are shown.
There were no detections for 1,1-dichloroethene, benzene, ethylbenzene, or total xylenes.

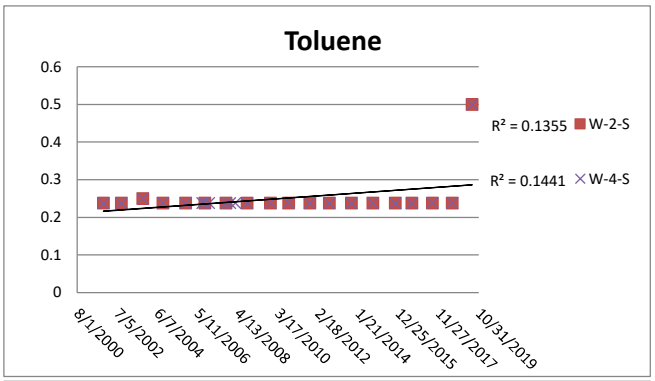
Figure E-4
South Settling Lagoon

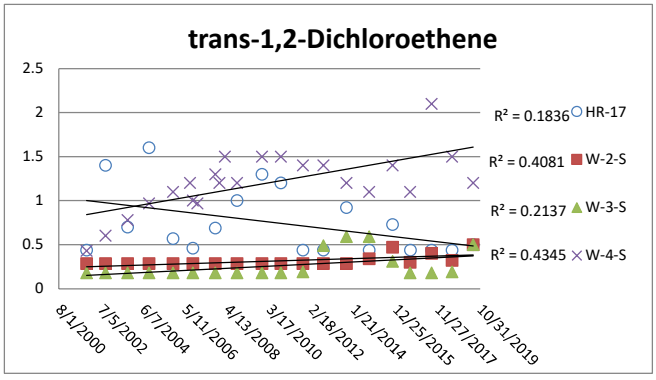


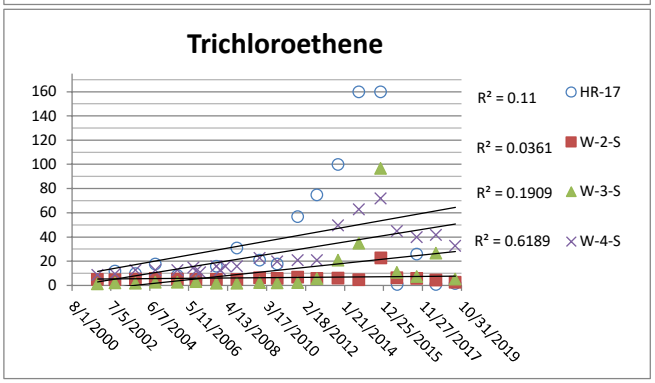


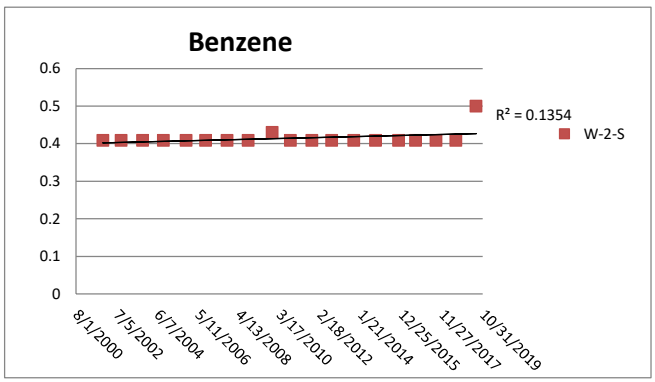












Notes:

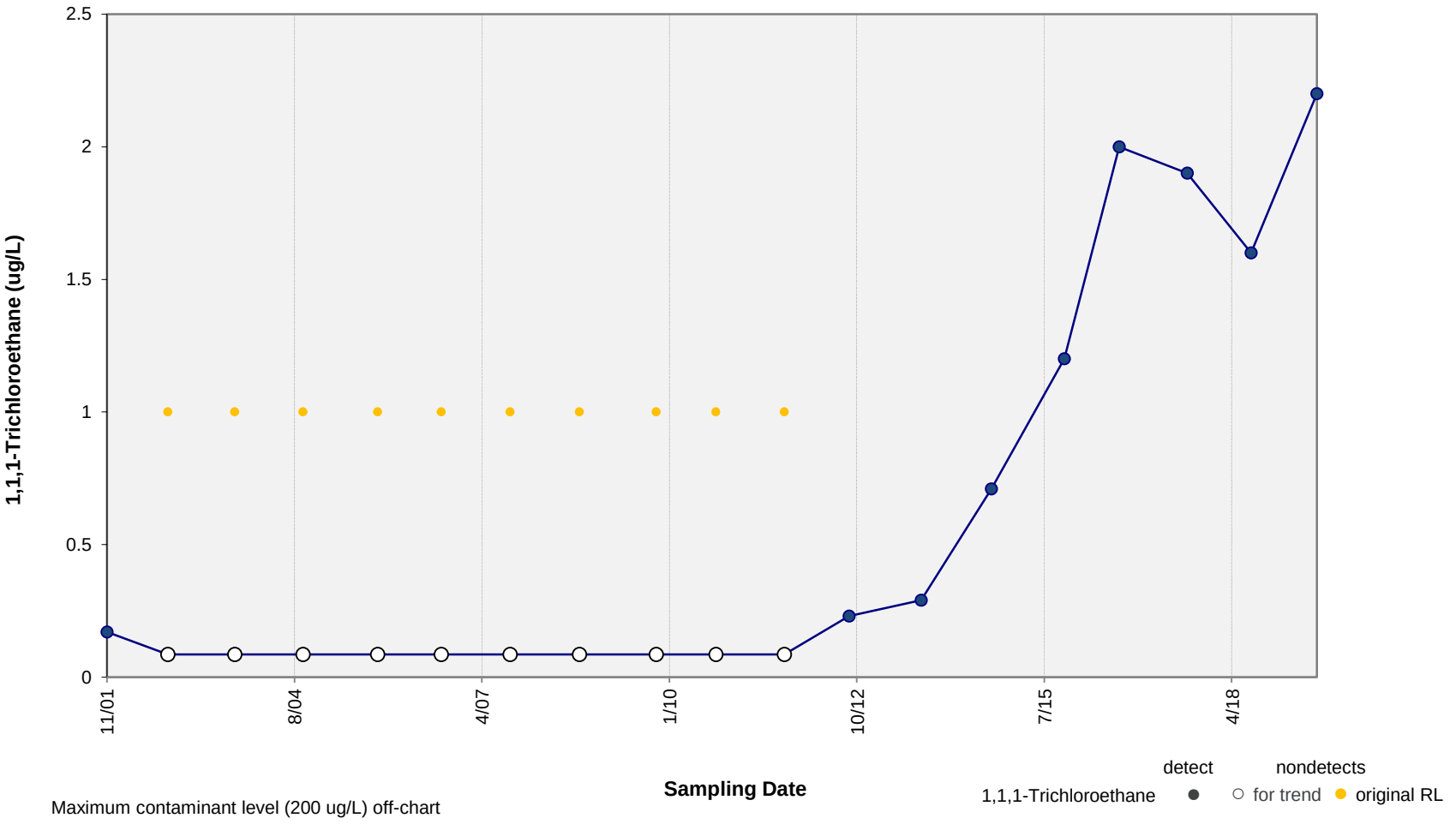
All results are in micrograms per liter.

Only datasets with at least one detected value are shown.

There were no detections for 1,1-dichloroethene, ethylbenzene, vinyl chloride, or total xylenes.

NA = not available

ND = not detected



Results of Mann-Kendall Test for Trend: **INCREASING TREND**

p value = <0.001 Note: p value < 0.05 indicates a statistically significant trend (95% confidence level).

Results of Sen's Estimator of Slope: **INCREASING TREND**

Median Slope Estimate = 2.0E-04 ug/L Per Day

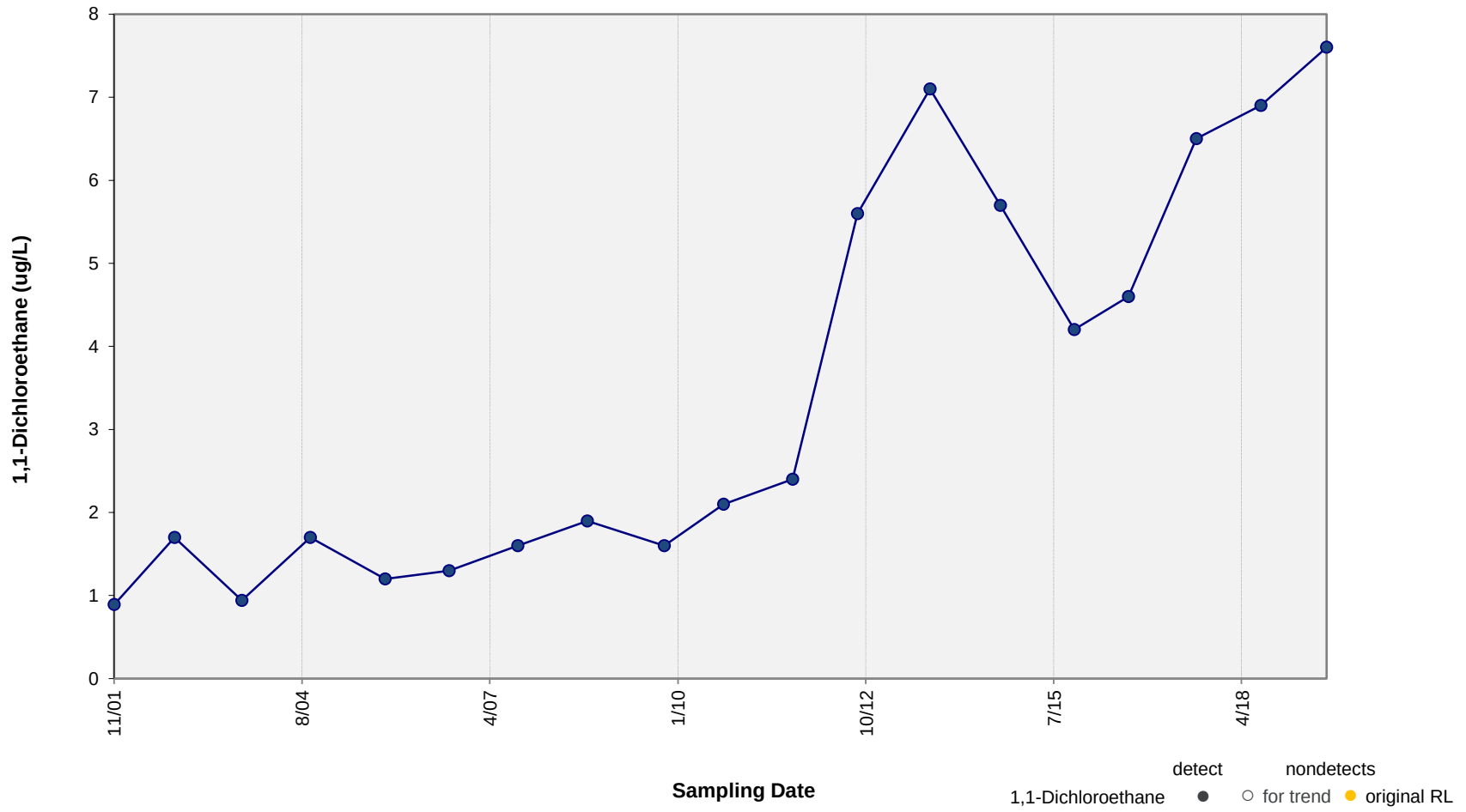
95% Confidence Interval = 2.4E-05 to 3.8E-04 ug/L Per Day

ARCADIS

Concentration vs. Time Plot – 1,1,1-Trichloroethane in Well HR-04

RACER Trust, Moraine, Ohio

FIGURE E-5



Results of Mann-Kendall Test for Trend: **INCREASING TREND**

p value = <0.001 Note: p value < 0.05 indicates a statistically significant trend (95% confidence level).

Results of Sen's Estimator of Slope: **INCREASING TREND**

Median Slope Estimate = 9.4E-04 ug/L Per Day

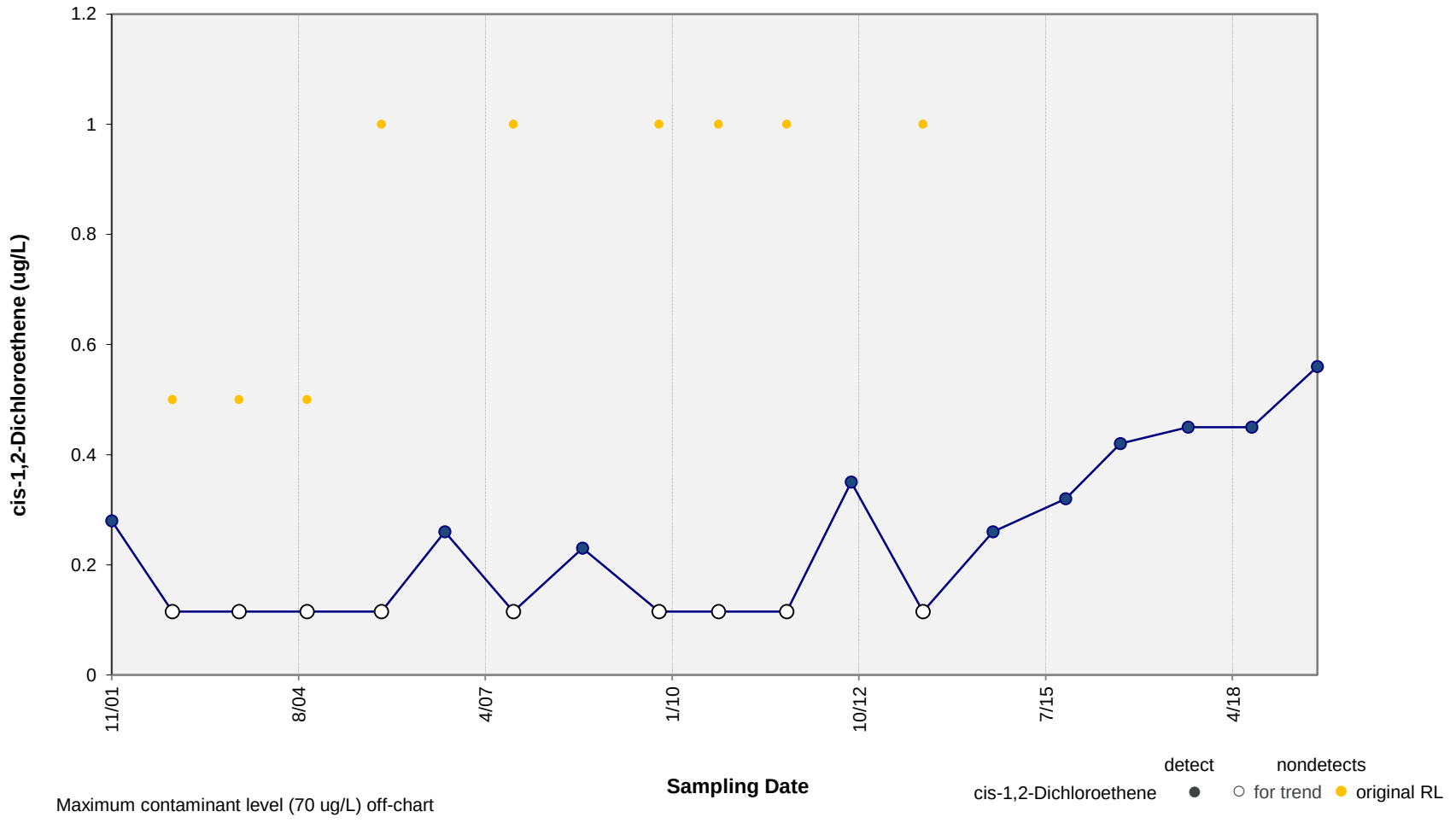
95% Confidence Interval = 5.7E-04 to 1.3E-03 ug/L Per Day

ARCADIS

Concentration vs. Time Plot – 1,1-Dichloroethane in Well W-4-N

RACER Trust, Moraine, Ohio

FIGURE E-6



Results of Mann-Kendall Test for Trend: **INCREASING TREND**

p value = 0.001 Note: p value < 0.05 indicates a statistically significant trend (95% confidence level).

Results of Sen's Estimator of Slope: **No trend**

Median Slope Estimate = 5.0E-05 ug/L Per Day

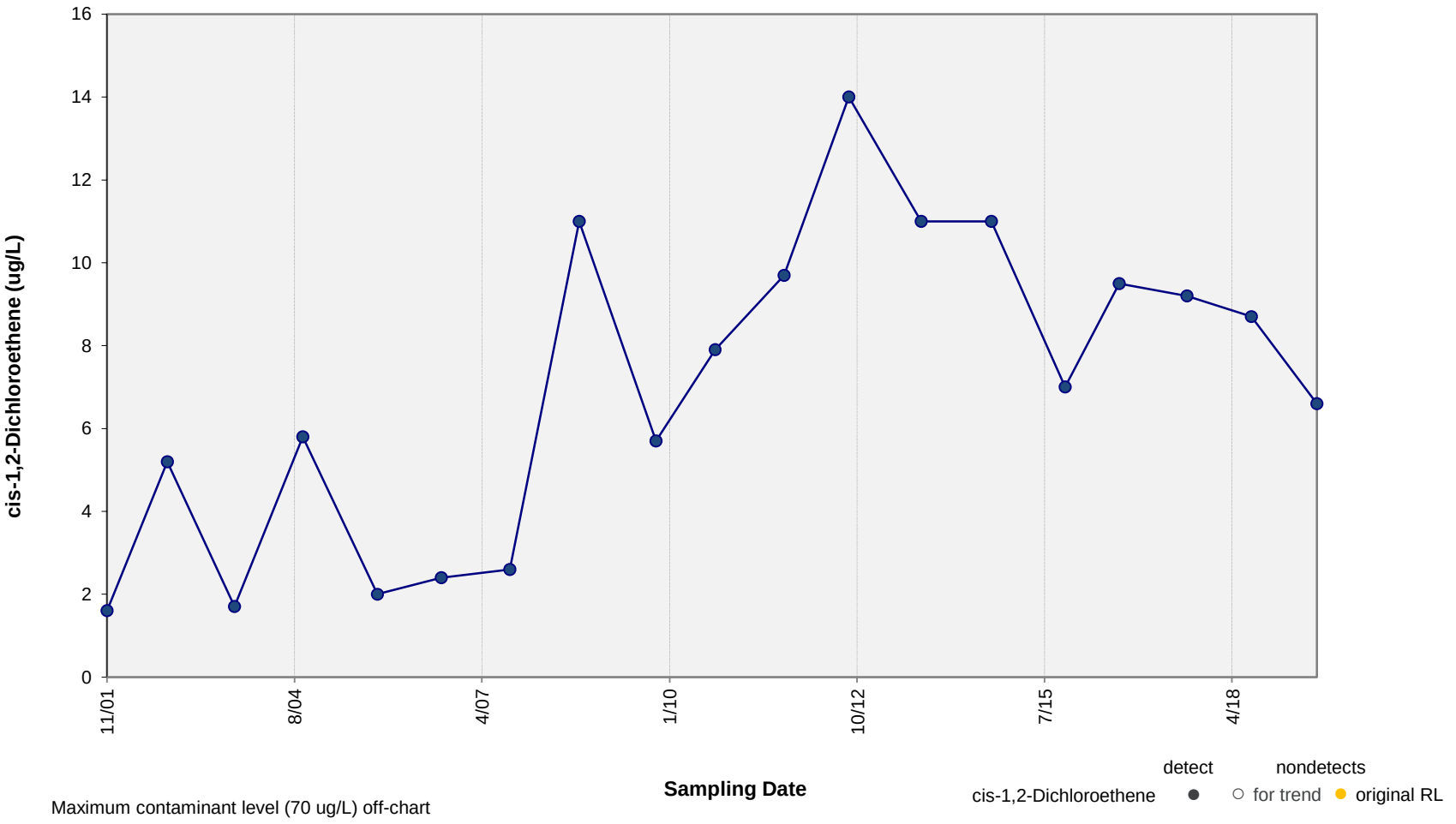
95% Confidence Interval = 0.0E+00 to 7.8E-05 ug/L Per Day

ARCADIS

Concentration vs. Time Plot – cis-1,2-Dichloroethene in Well HR-04

RACER Trust, Moraine, Ohio

FIGURE E-7



Maximum contaminant level (70 ug/L) off-chart

Results of Mann-Kendall Test for Trend: **INCREASING TREND**

p value = 0.005 Note: p value < 0.05 indicates a statistically significant trend (95% confidence level).

Results of Sen's Estimator of Slope: **INCREASING TREND**

Median Slope Estimate = 1.2E-03 ug/L Per Day

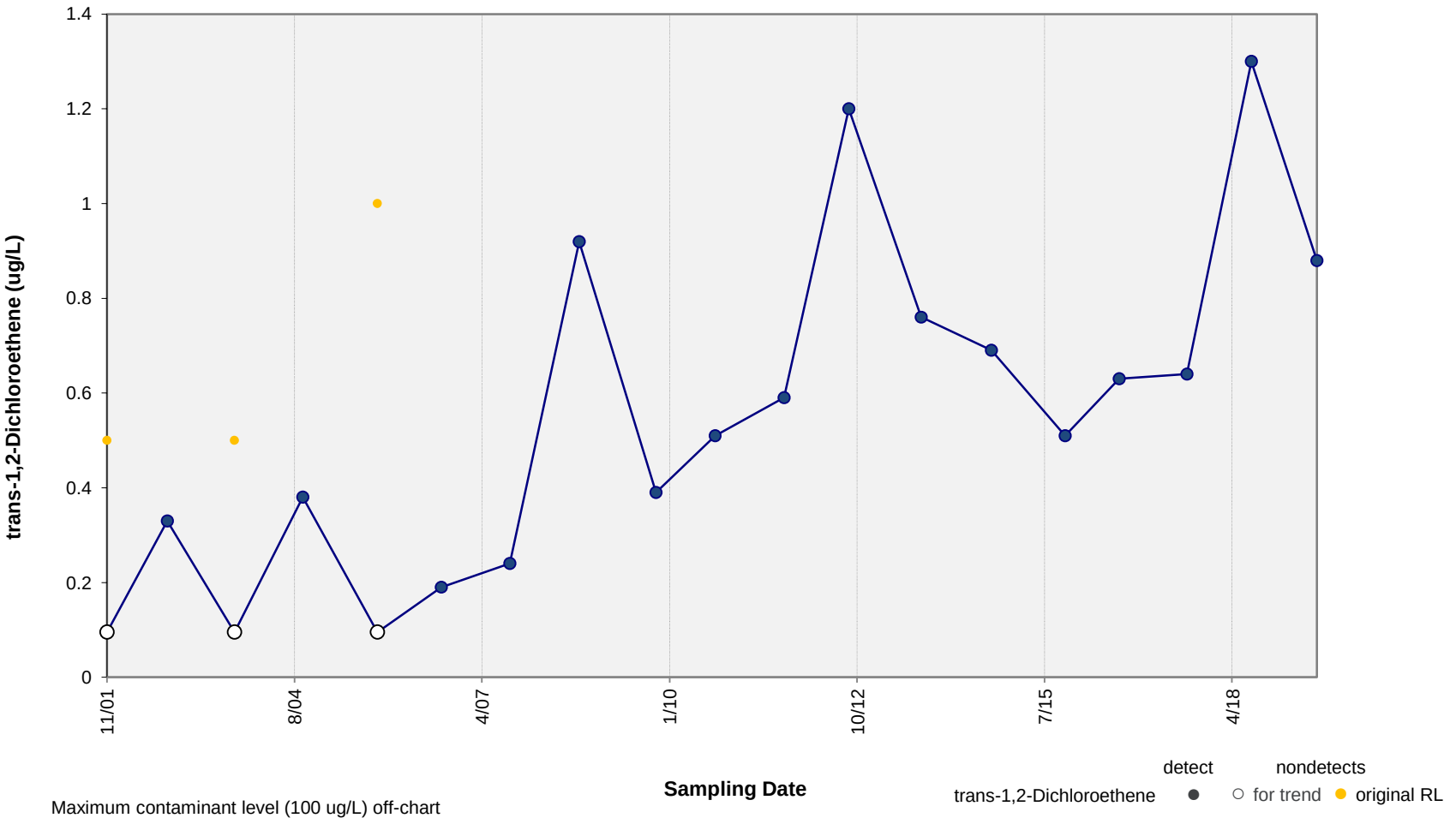
95% Confidence Interval = 2.9E-04 to 1.8E-03 ug/L Per Day

ARCADIS

Concentration vs. Time Plot – cis-1,2-Dichloroethene in Well W-4-N

RACER Trust, Moraine, Ohio

FIGURE E-8



Maximum contaminant level (100 ug/L) off-chart

Results of Mann-Kendall Test for Trend: **INCREASING TREND**

p value = <0.001 Note: p value < 0.05 indicates a statistically significant trend (95% confidence level).

Results of Sen's Estimator of Slope: **INCREASING TREND**

Median Slope Estimate = 1.2E-04 ug/L Per Day

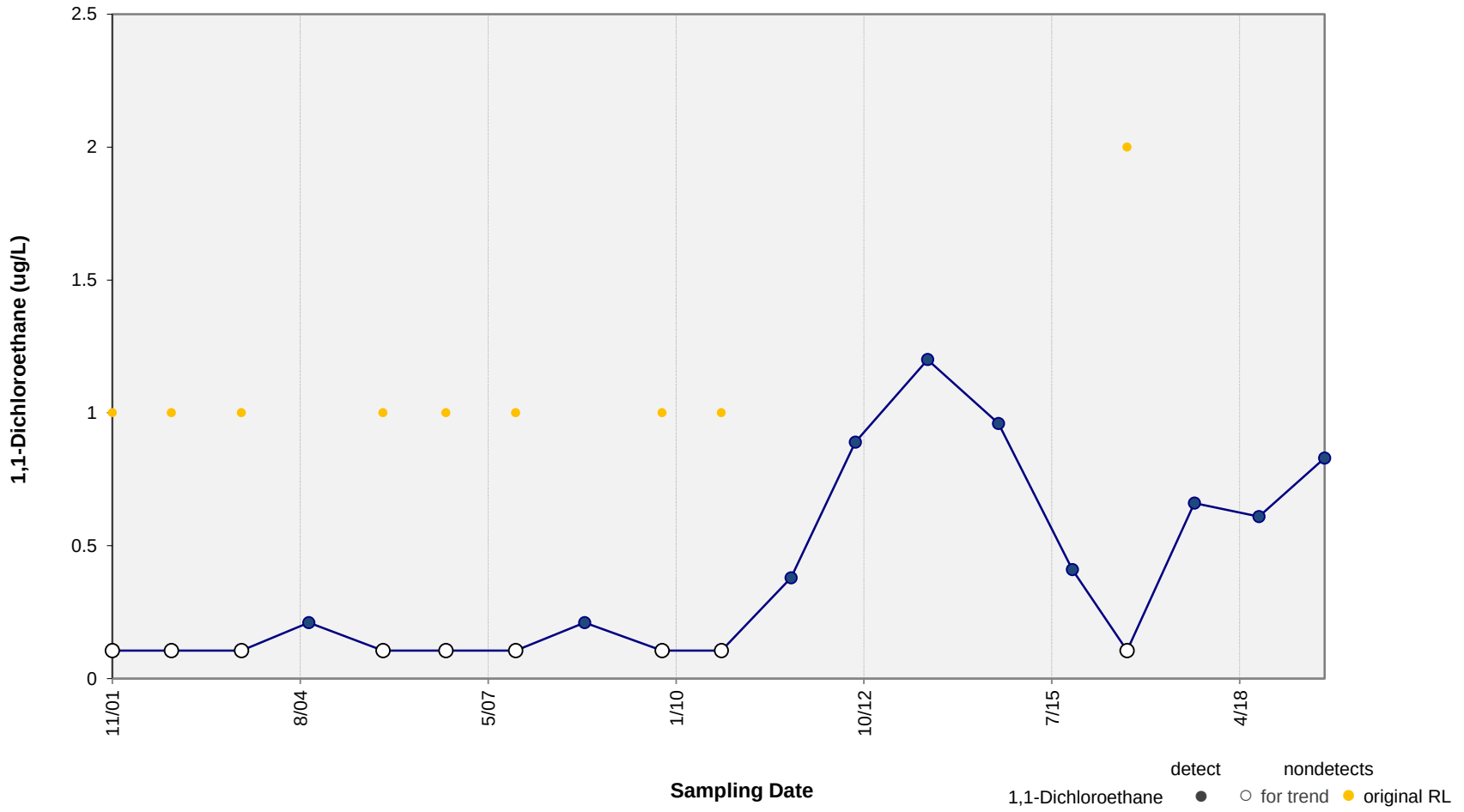
95% Confidence Interval = 8.0E-05 to 1.9E-04 ug/L Per Day

ARCADIS

Concentration vs. Time Plot – trans-1,2-Dichloroethene in Well W-4-N

RACER Trust, Moraine, Ohio

FIGURE E-9



Results of Mann-Kendall Test for Trend: **INCREASING TREND**

p value = 0.002 Note: p value < 0.05 indicates a statistically significant trend (95% confidence level).

Results of Sen's Estimator of Slope: **No trend**

Median Slope Estimate = 9.4E-05 ug/L Per Day

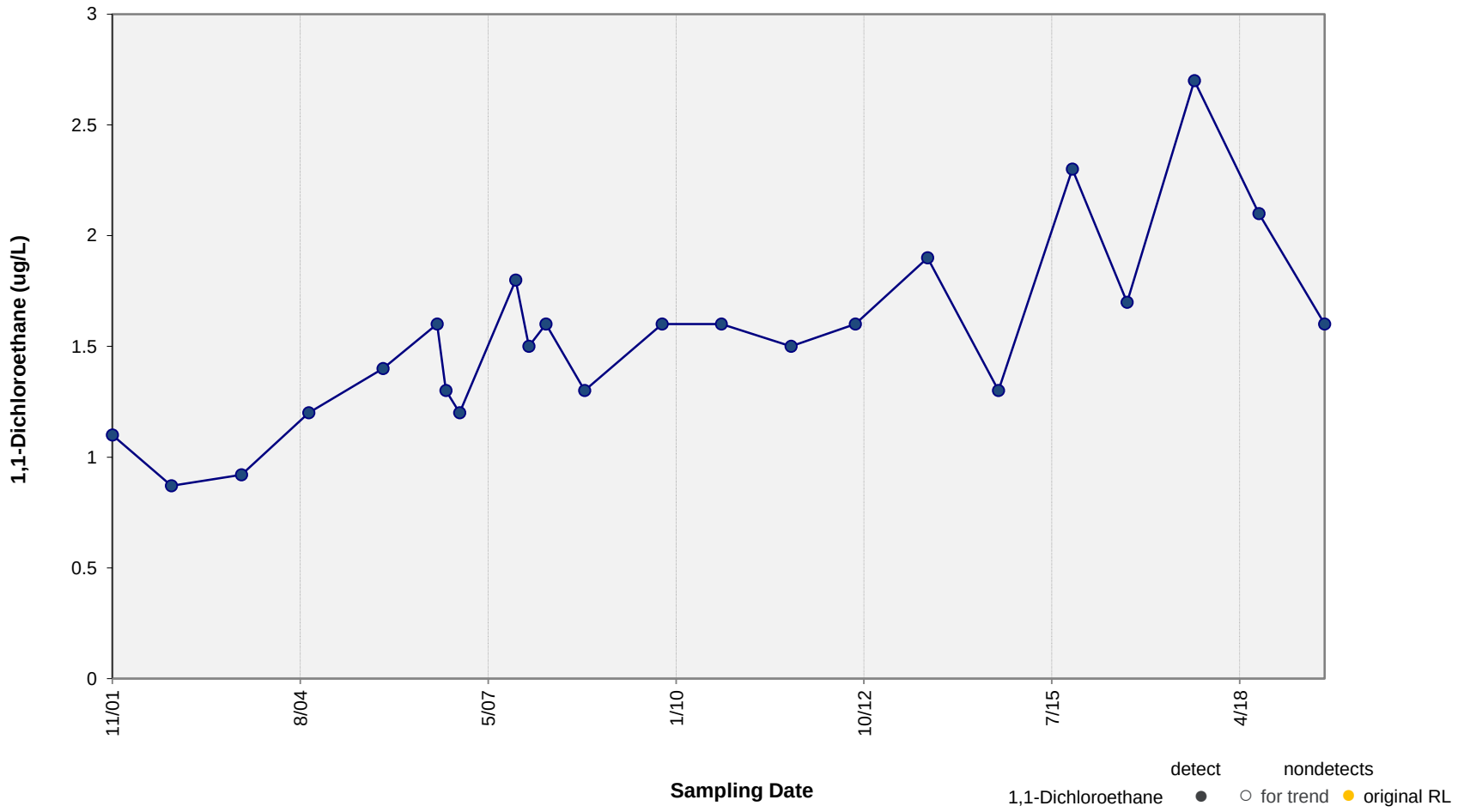
95% Confidence Interval = 0.0E+00 to 1.5E-04 ug/L Per Day

ARCADIS

Concentration vs. Time Plot – 1,1-Dichloroethane in Well W-3-S

RACER Trust, Moraine, Ohio

FIGURE E-10



Results of Mann-Kendall Test for Trend: **INCREASING TREND**

p value = <0.001 Note: p value < 0.05 indicates a statistically significant trend (95% confidence level).

Results of Sen's Estimator of Slope: **INCREASING TREND**

Median Slope Estimate = 1.6E-04 ug/L Per Day

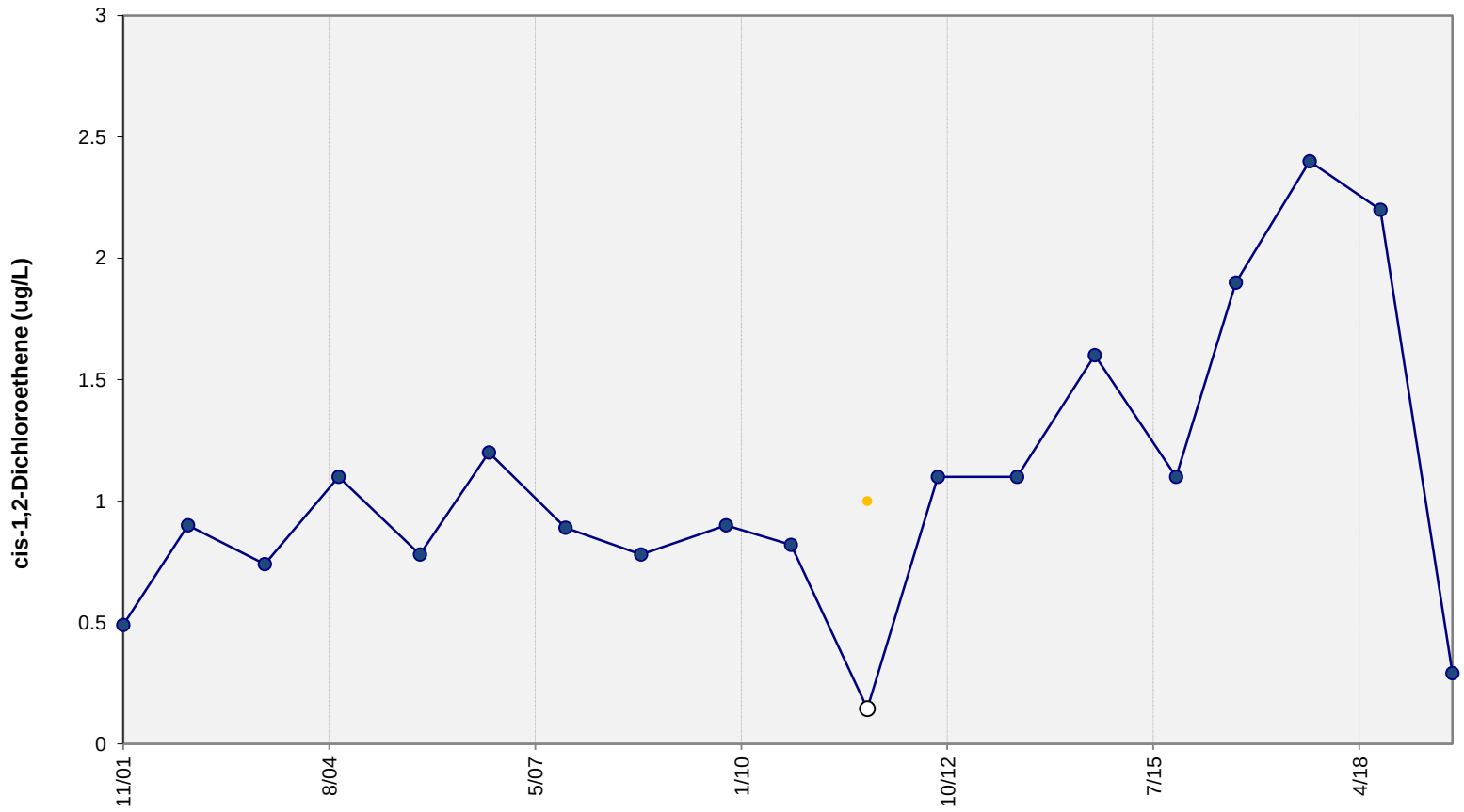
95% Confidence Interval = 8.6E-05 to 2.3E-04 ug/L Per Day

ARCADIS

Concentration vs. Time Plot – 1,1-Dichloroethane in Well W-4-S

RACER Trust, Moraine, Ohio

FIGURE E-11



Maximum contaminant level (70 ug/L) off-chart

Results of Mann-Kendall Test for Trend: **INCREASING TREND**

p value = 0.012 Note: p value < 0.05 indicates a statistically significant trend (95% confidence level).

Results of Sen's Estimator of Slope: **INCREASING TREND**

Median Slope Estimate = 1.4E-04 ug/L Per Day

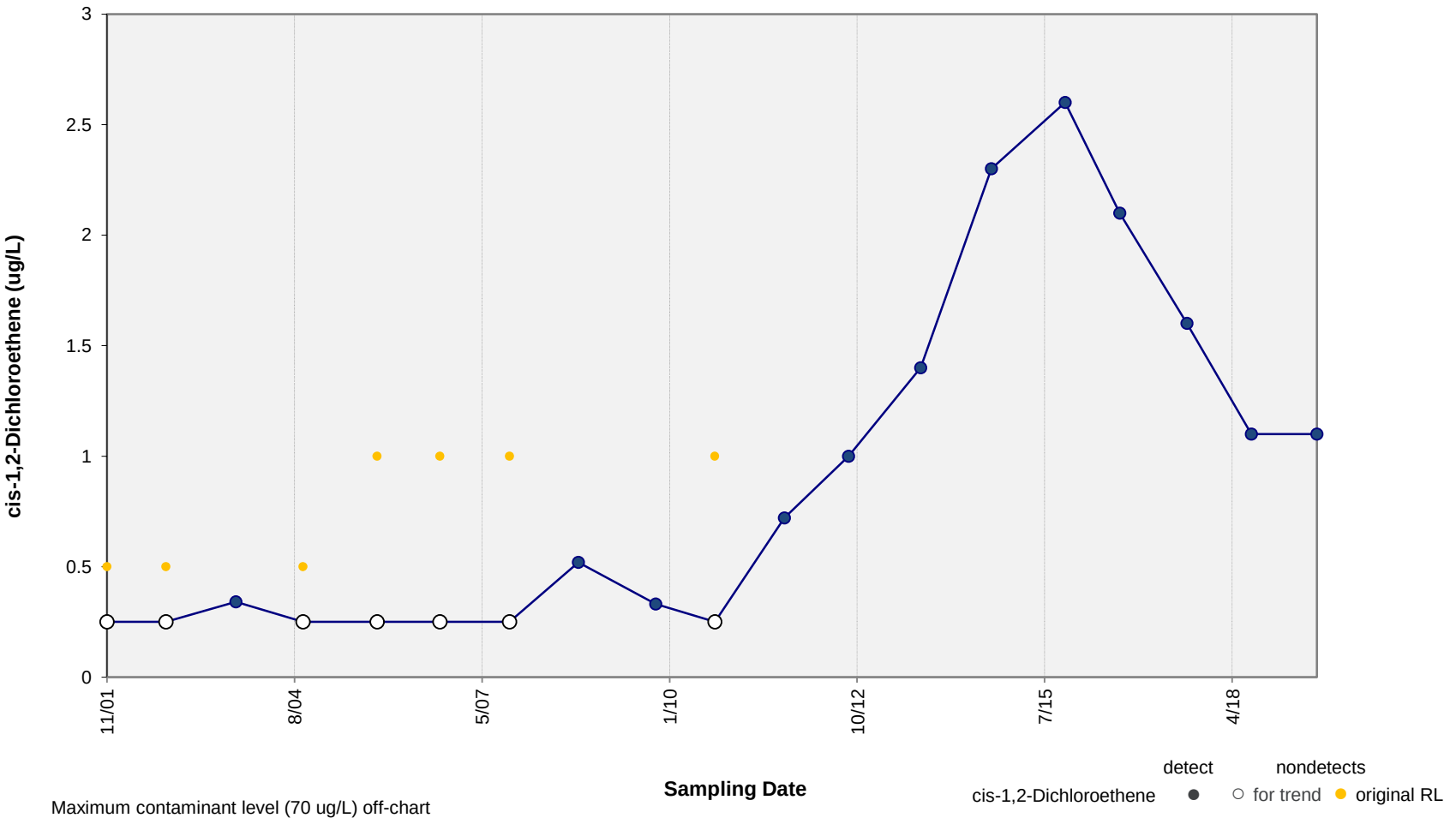
95% Confidence Interval = 8.6E-06 to 2.7E-04 ug/L Per Day

ARCADIS

Concentration vs. Time Plot – cis-1,2-Dichloroethene in Well W-2-S

RACER Trust, Moraine, Ohio

FIGURE E-12



Maximum contaminant level (70 ug/L) off-chart

Results of Mann-Kendall Test for Trend: **INCREASING TREND**

p value = <0.001 Note: p value < 0.05 indicates a statistically significant trend (95% confidence level).

Results of Sen's Estimator of Slope: **INCREASING TREND**

Median Slope Estimate = 2.1E-04 ug/L Per Day

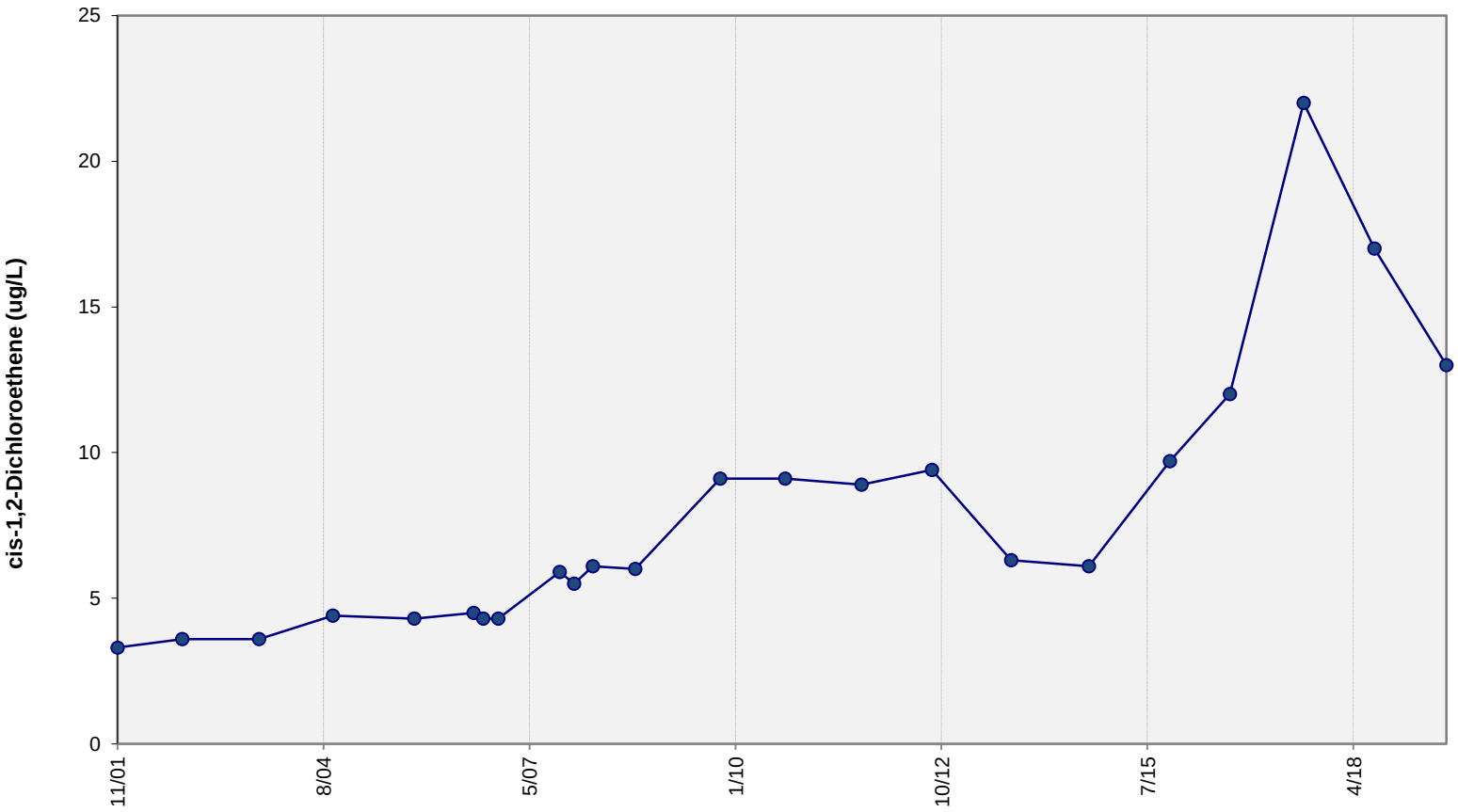
95% Confidence Interval = 1.3E-04 to 3.6E-04 ug/L Per Day

ARCADIS

Concentration vs. Time Plot – cis-1,2-Dichloroethene in Well W-3-S

RACER Trust, Moraine, Ohio

FIGURE E-13



Maximum contaminant level (70 ug/L) off-chart

Results of Mann-Kendall Test for Trend: **INCREASING TREND**

p value = <0.001 Note: p value < 0.05 indicates a statistically significant trend (95% confidence level).

Results of Sen's Estimator of Slope: **INCREASING TREND**

Median Slope Estimate = 1.7E-03 ug/L Per Day

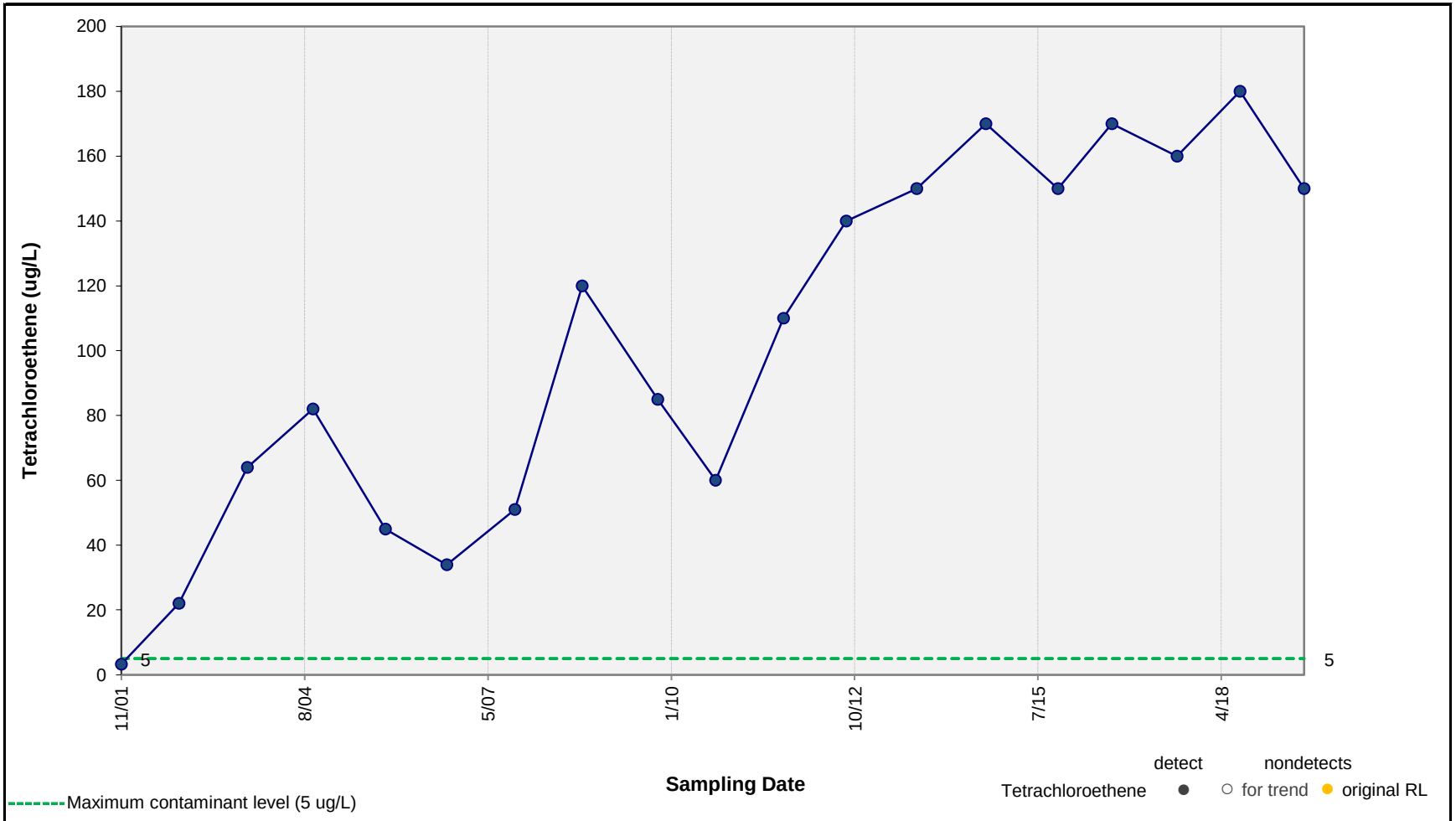
95% Confidence Interval = 1.2E-03 to 2.2E-03 ug/L Per Day

ARCADIS

Concentration vs. Time Plot – cis-1,2-Dichloroethene in Well W-4-S

RACER Trust, Moraine, Ohio

FIGURE E-14



Results of Mann-Kendall Test for Trend: **INCREASING TREND**

p value = <0.001 Note: p value < 0.05 indicates a statistically significant trend (95% confidence level).

Results of Sen's Estimator of Slope: **INCREASING TREND**

Median Slope Estimate = 2.6E-02 ug/L Per Day

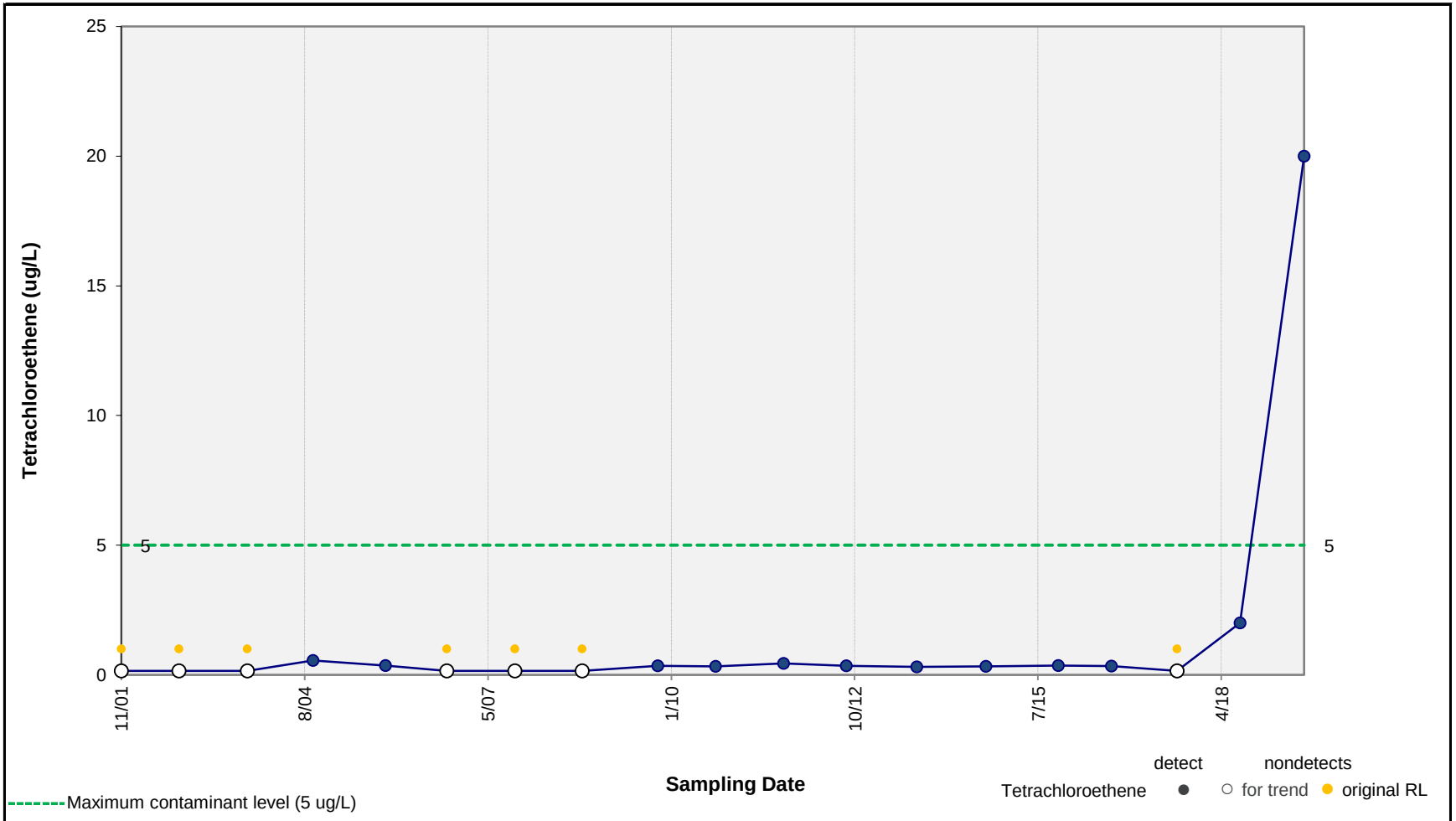
95% Confidence Interval = 1.8E-02 to 3.2E-02 ug/L Per Day

ARCADIS

Concentration vs. Time Plot – Tetrachloroethene in Well HR-17

RACER Trust, Moraine, Ohio

FIGURE E-15



Results of Mann-Kendall Test for Trend: **INCREASING TREND**

p value = 0.022 Note: p value < 0.05 indicates a statistically significant trend (95% confidence level).

Results of Sen's Estimator of Slope: **No trend**

Median Slope Estimate = 4.2E-05 ug/L Per Day

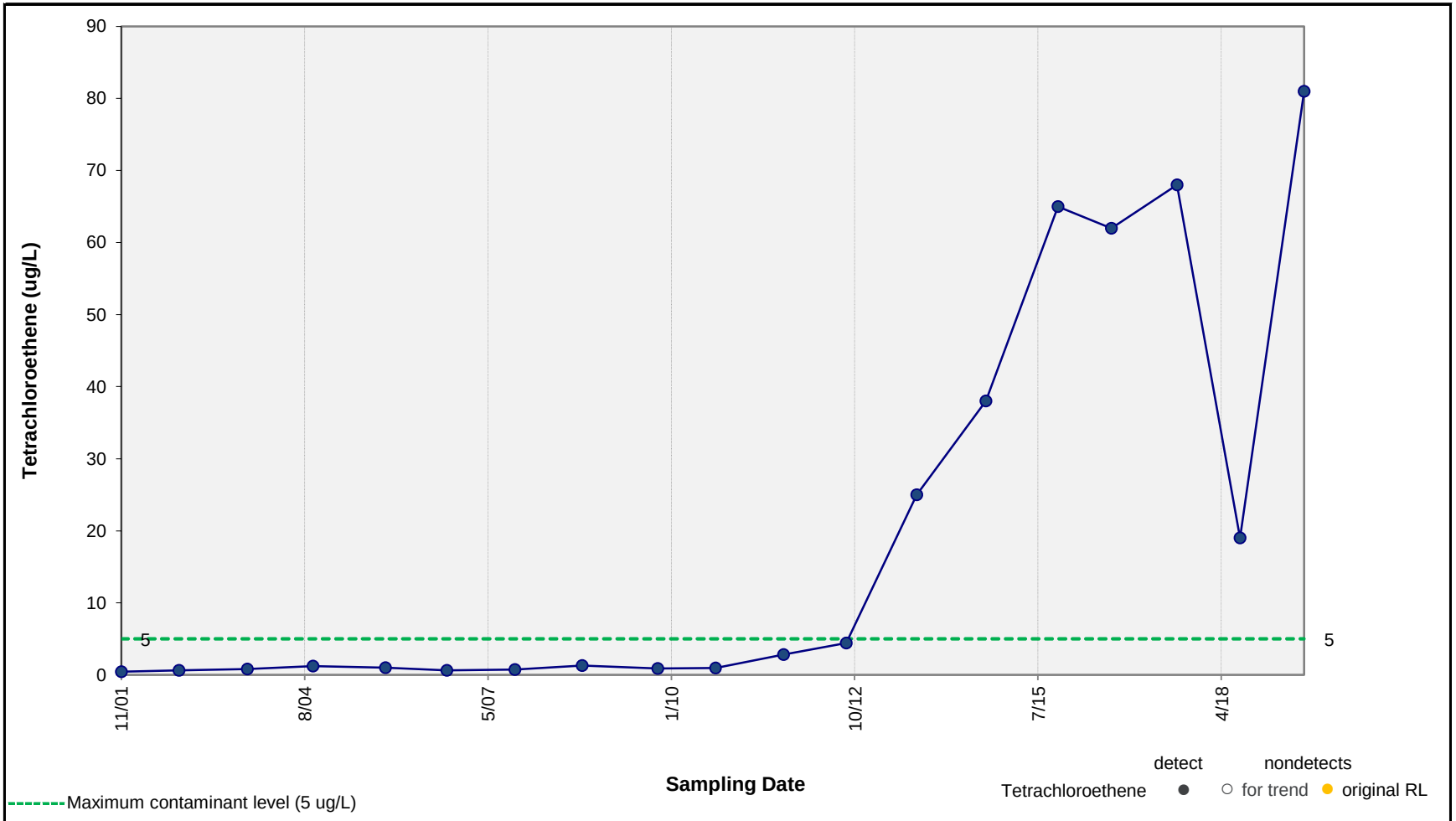
95% Confidence Interval = 0.0E+00 to 8.3E-05 ug/L Per Day

ARCADIS

Concentration vs. Time Plot – Tetrachloroethene in Well W-2-S

RACER Trust, Moraine, Ohio

FIGURE E-16



Results of Mann-Kendall Test for Trend: **INCREASING TREND**

p value = <0.001 Note: p value < 0.05 indicates a statistically significant trend (95% confidence level).

Results of Sen's Estimator of Slope: **INCREASING TREND**

Median Slope Estimate = 6.5E-03 ug/L Per Day

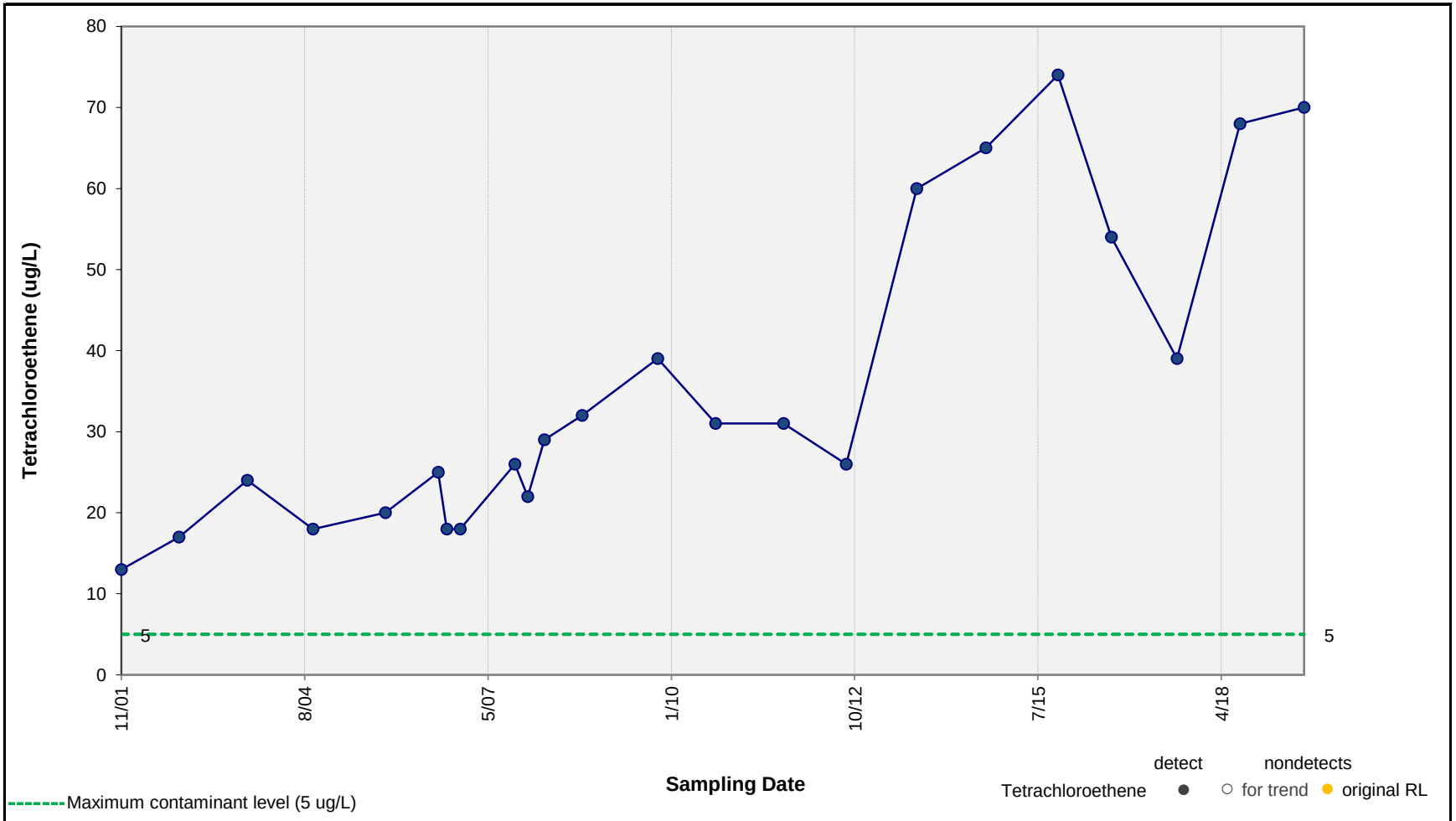
95% Confidence Interval = 1.1E-03 to 1.4E-02 ug/L Per Day

ARCADIS

Concentration vs. Time Plot – Tetrachloroethene in Well W-3-S

RACER Trust, Moraine, Ohio

FIGURE E-17



Results of Mann-Kendall Test for Trend: **INCREASING TREND**

p value = <0.001 Note: p value < 0.05 indicates a statistically significant trend (95% confidence level).

Results of Sen's Estimator of Slope: **INCREASING TREND**

Median Slope Estimate = 8.6E-03 ug/L Per Day

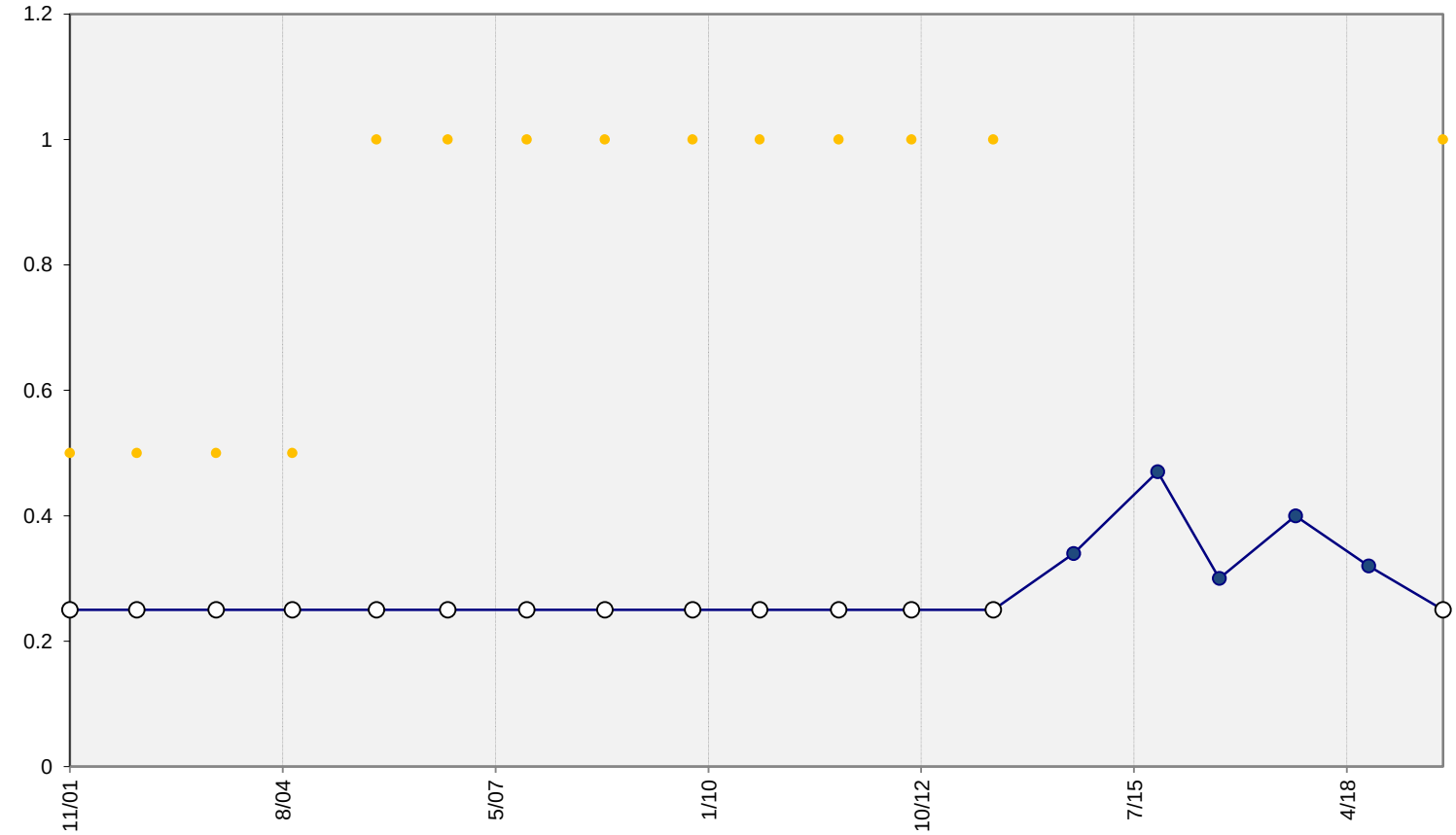
95% Confidence Interval = 5.0E-03 to 1.1E-02 ug/L Per Day

ARCADIS

Concentration vs. Time Plot – Tetrachloroethene in Well W-4-S

RACER Trust, Moraine, Ohio

FIGURE E-18



Maximum contaminant level (100 ug/L) off-chart

Results of Mann-Kendall Test for Trend: **INCREASING TREND**

p value = 0.005 Note: p value < 0.05 indicates a statistically significant trend (95% confidence level).

Results of Sen's Estimator of Slope: **No trend**

Median Slope Estimate = 0.0E+00 ug/L Per Day

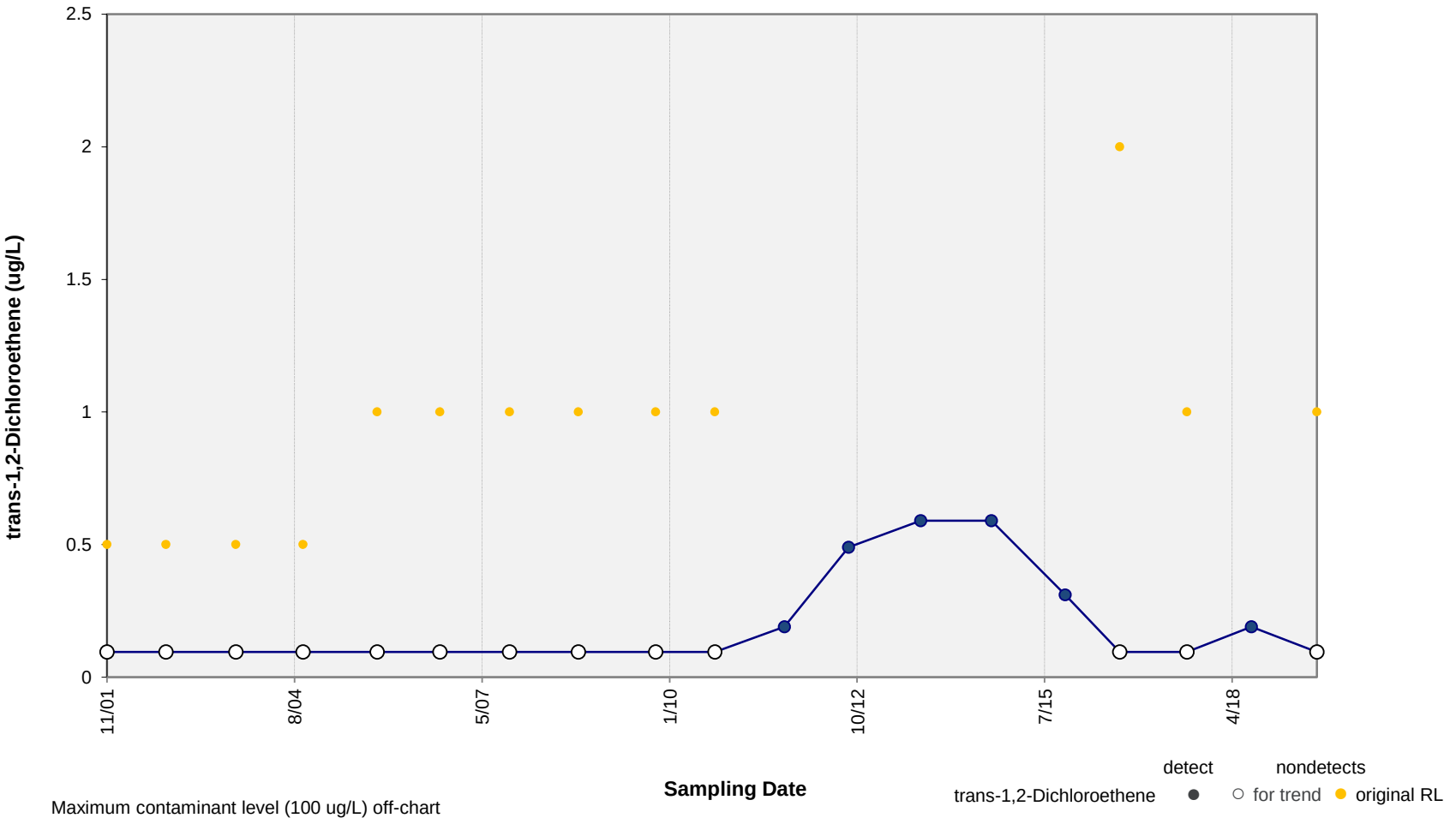
95% Confidence Interval = 0.0E+00 to 1.2E-05 ug/L Per Day

ARCADIS

Concentration vs. Time Plot – trans-1,2-Dichloroethene in Well W-2-S

RACER Trust, Moraine, Ohio

FIGURE E-19



Maximum contaminant level (100 ug/L) off-chart

Results of Mann-Kendall Test for Trend: **INCREASING TREND**

p value = 0.030 Note: p value < 0.05 indicates a statistically significant trend (95% confidence level).

Results of Sen's Estimator of Slope: **No trend**

Median Slope Estimate = 0.0E+00 ug/L Per Day

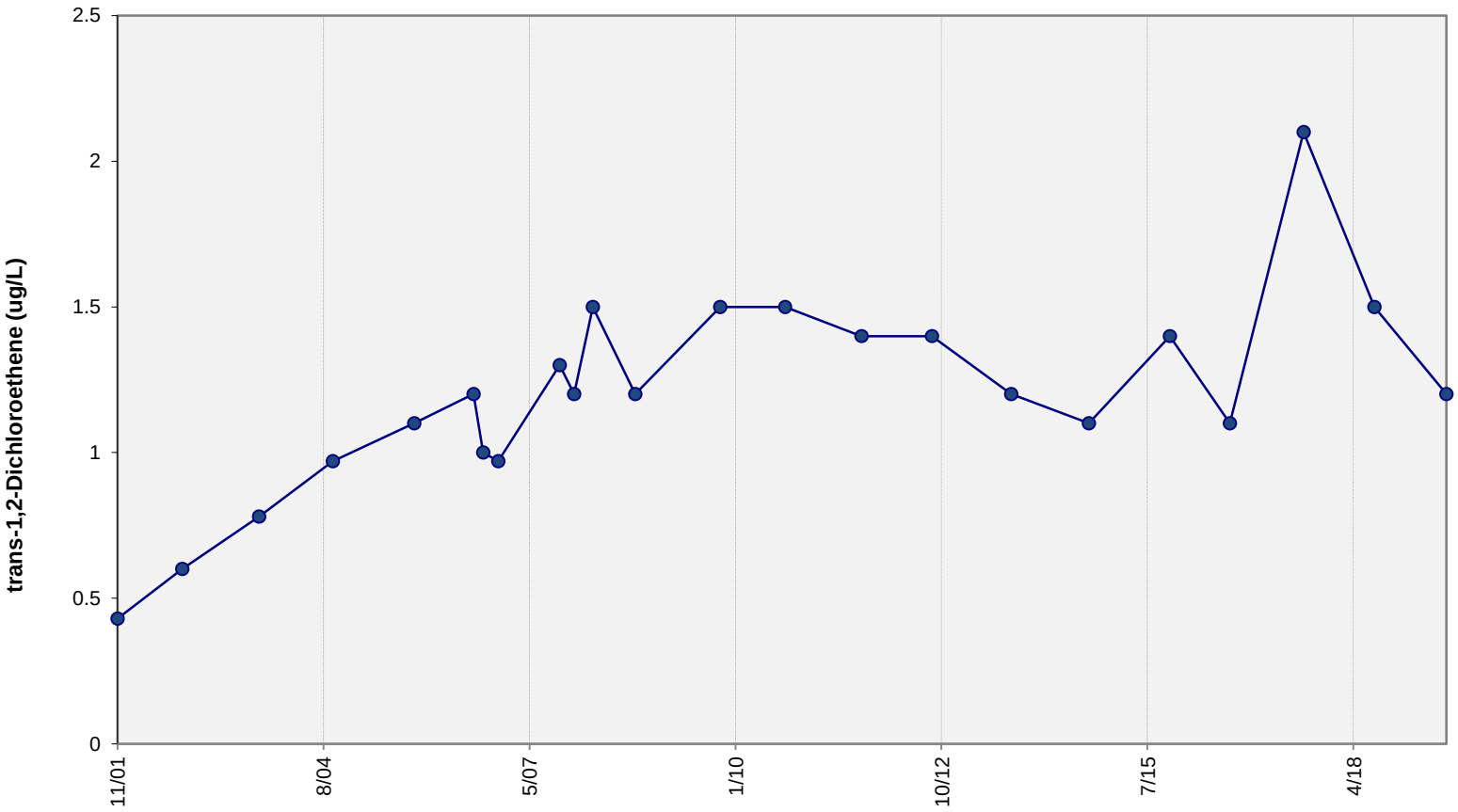
95% Confidence Interval = 0.0E+00 to 2.1E-05 ug/L Per Day

ARCADIS

Concentration vs. Time Plot – trans-1,2-Dichloroethene in Well W-3-S

RACER Trust, Moraine, Ohio

FIGURE E-20



Maximum contaminant level (100 ug/L) off-chart

Results of Mann-Kendall Test for Trend: **INCREASING TREND**

p value = <0.001 Note: p value < 0.05 indicates a statistically significant trend (95% confidence level).

Results of Sen's Estimator of Slope: **INCREASING TREND**

Median Slope Estimate = 1.2E-04 ug/L Per Day

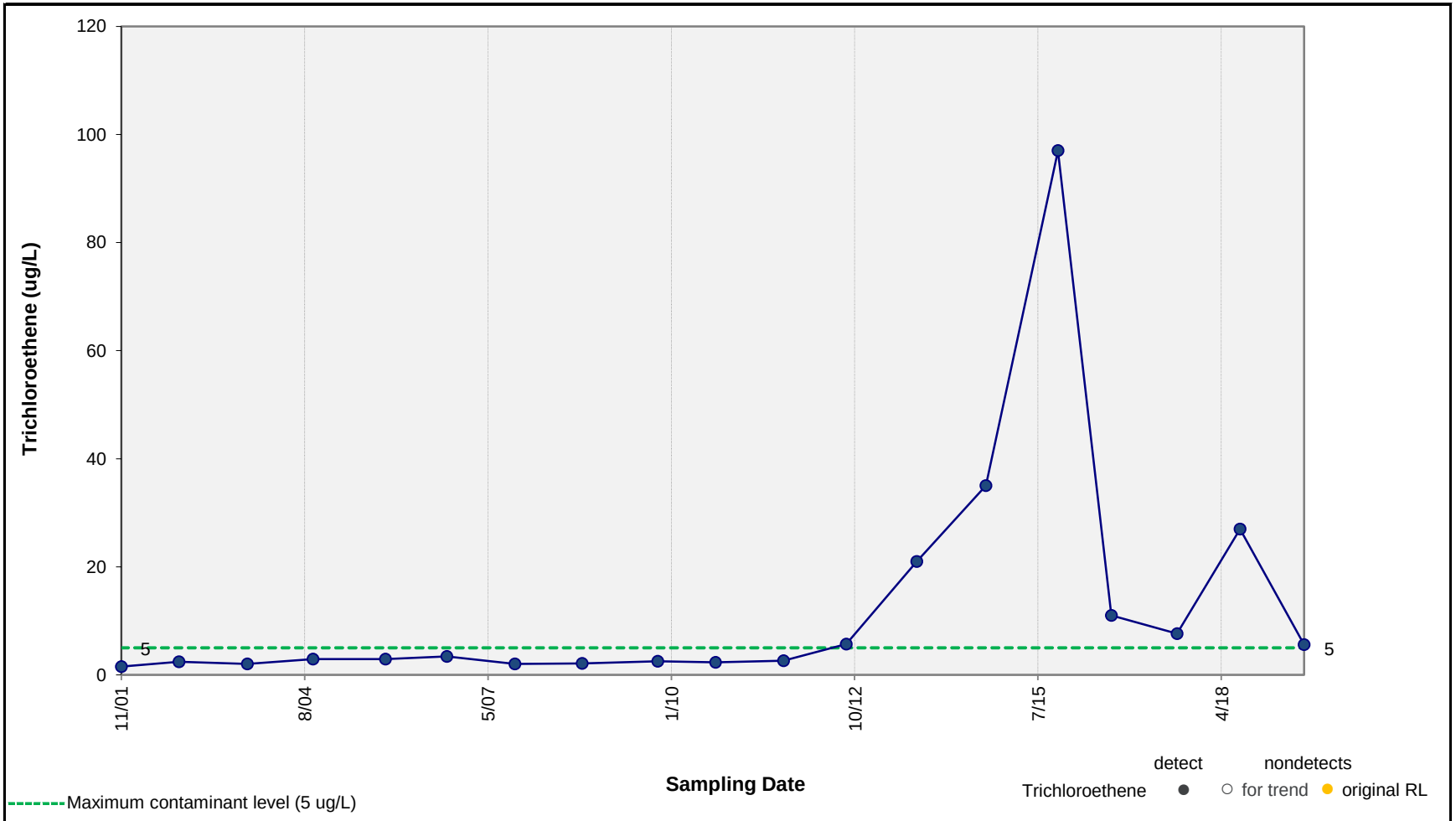
95% Confidence Interval = 4.5E-05 to 2.2E-04 ug/L Per Day

ARCADIS

Concentration vs. Time Plot – trans-1,2-Dichloroethene in Well W-4-S

RACER Trust, Moraine, Ohio

FIGURE E-21



Results of Mann-Kendall Test for Trend: **INCREASING TREND**

p value = <0.001 Note: p value < 0.05 indicates a statistically significant trend (95% confidence level).

Results of Sen's Estimator of Slope: **INCREASING TREND**

Median Slope Estimate = 1.1E-03 ug/L Per Day

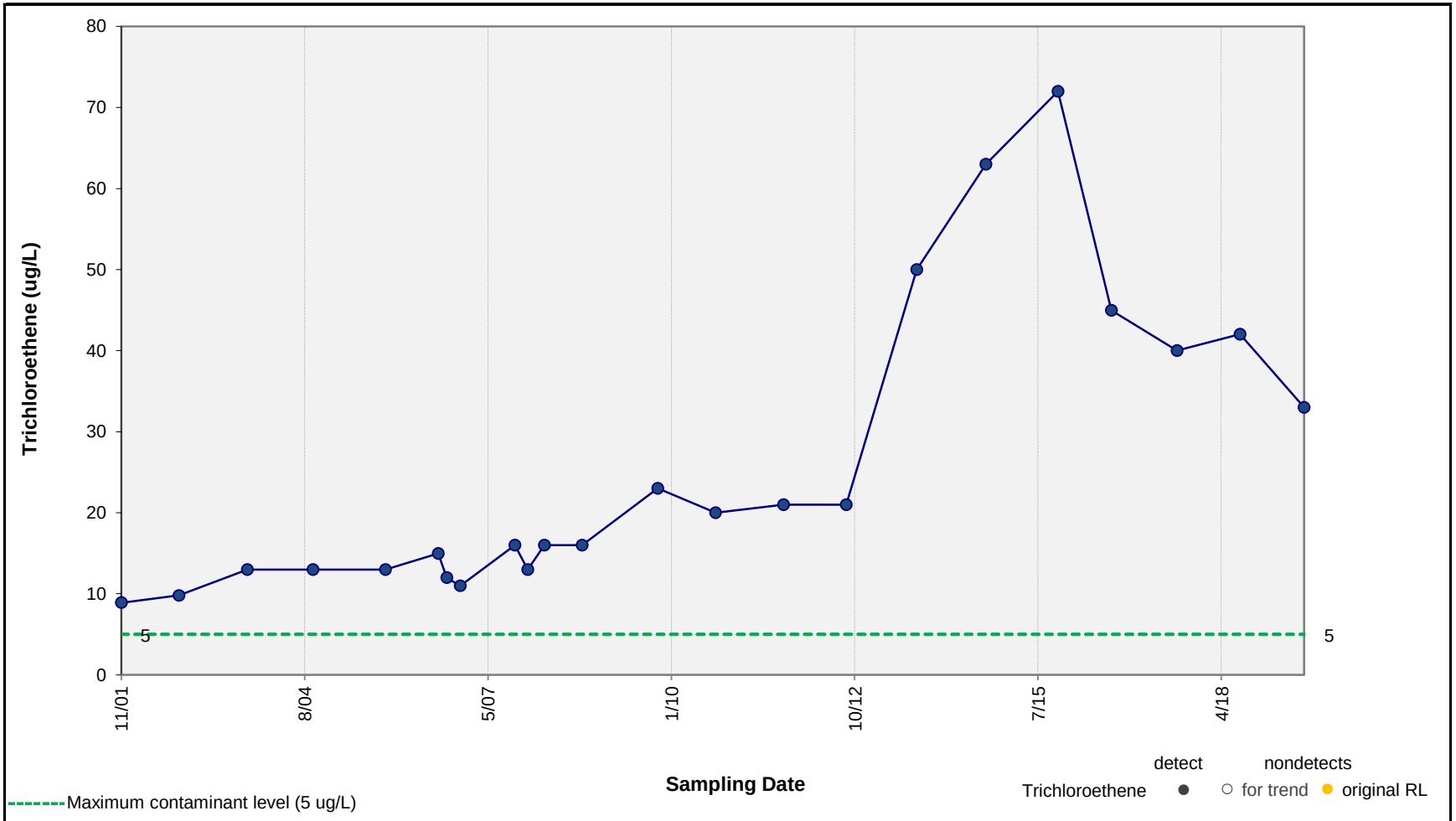
95% Confidence Interval = 4.9E-04 to 3.5E-03 ug/L Per Day

ARCADIS

Concentration vs. Time Plot – Trichloroethene in Well W-3-S

RACER Trust, Moraine, Ohio

FIGURE E-22



Results of Mann-Kendall Test for Trend: **INCREASING TREND**

p value = <0.001 Note: p value < 0.05 indicates a statistically significant trend (95% confidence level).

Results of Sen's Estimator of Slope: **INCREASING TREND**

Median Slope Estimate = 5.3E-03 ug/L Per Day

95% Confidence Interval = 3.4E-03 to 7.1E-03 ug/L Per Day

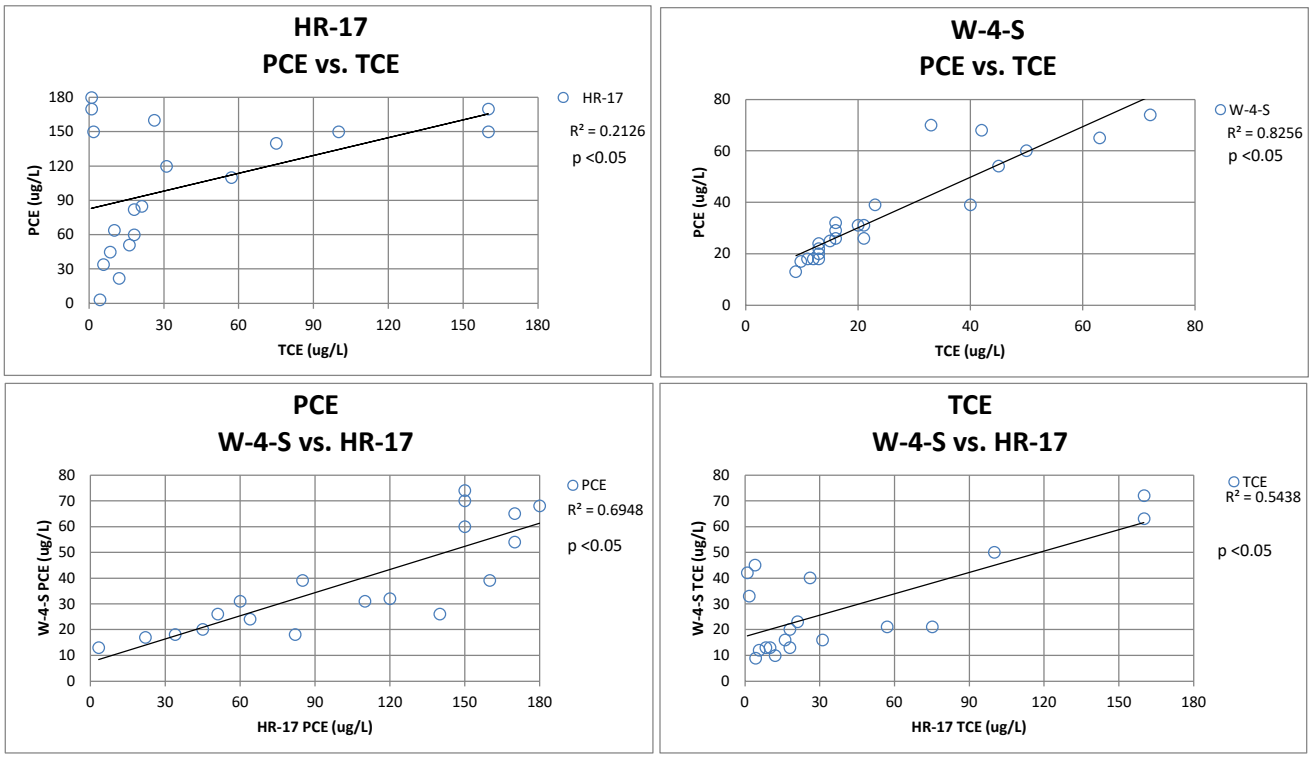
ARCADIS

Concentration vs. Time Plot – Trichloroethene in Well W-4-S

RACER Trust, Moraine, Ohio

FIGURE E-23

Figure E-24
South Settling Lagoon Upgradient vs Downgradient Wells



Notes:

All results are in micrograms per liter.

Coefficient of determination was calculated in Excel 2016.

Pearson product moment correlation significance was tested using Excel 2016.

PCE = Tetrachloroethene

TCE = Trichloroethene

p = p-value for significance of the correlation

R^2 = coeffiecient of determination

ATTACHMENT E-1

Groundwater Sampling Forms

ARCADIS Design & Consultancy for natural and built assets

Groundwater Sampling Form

Project No. 30018090.0004B | Well ID HR-4 | Date 7/9/2019

Project Name/Location Racer Trust-Moraine Ohio | Weather Sunny, 80s

Measuring Pt. Description: Top of Casing | Screen Setting (ft-bmp): 55-65 | Casing Diameter (in.): 2 | Well Material: X PVC, SS

Static Water Level (ft-bmp): 29.94 | Total Depth (ft-bmp): 67 | Water Column: 37.06 | Gallons in Well: 5.9

MP Elevation | Pump Intake (ft-bmp): 60 | Purge Method: Low Flow | Sample Method: Low Flow

Pump On: 12:50 | Volumes Purged: 0.59 | Centrifugal | Submersible: X | Other

Off: 13:38

Sample Time: Label 13:35 | Gallons Purged: 3.5

Purge Start: 12:50 | Replicate/ Code No.: DUP-1, MS/MSD | Sampled by: S. Clark

Purge End: 13:20

Time	Minutes Elapsed	Rate (gpm) (mL/min)	Depth to Water (ft)	Gallons Purged	pH	Cond. (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temp. (°C)	Redox (mV)	Appearance	
											Color	Odor
12:50	0	940	29.90	NM	6.57	1.40	NM	0.56	15.3	171	Colorless	None
12:55	5	800	29.90	1.05	6.69	1.40	49	0.47	15.3	143	Colorless	None
13:00	10	540	29.90	1.75	6.88	1.40	35	0.42	15.3	129	Colorless	None
13:05	15	560	30.00	2.50	6.94	1.42	20	0.30	16.0	106	Colorless	None
13:10	20	510	30.00	3.15	6.95	1.41	12	0.28	15.5	94.5	Colorless	None
13:15	25	560	30.00	3.90	6.95	1.41	9.3	0.30	15.6	94.5	Colorless	None
13:20	30	510	30.00	4.55	6.96	1.42	7.9	0.35	16.0	91.7	Colorless	None

Constituents Sampled	Container	Number	Preservative
VOCs	40 mL Glass Vial	3	HCl

Comments NM = Not measured

Well Casing Volumes

Gallons/Foot: 1" = 0.04; 1.25" = 0.06; 1.5" = 0.09; 2" = 0.16; 2.5" = 0.26; 3" = 0.37; 3.5" = 0.50; 4" = 0.65; 6" = 1.47

Well Information

Well Location:	North Settling Lagoon	Well Locked at Arrival:	Yes
Condition of Well:	Good	Well Locked at Departure:	Yes
Well Completion:	Stick Up	Key Number To Well:	

ARCADIS Design & Consultancy for natural and built assets

Groundwater Sampling Form

Project No. 30018090.0004B | Well ID W-2-N | Date 7/9/2019

Project Name/Location Racer Trust-Moraine Ohio | Weather Sunny, 80s

Measuring Pt. Description: Top of Casing | Screen Setting (ft-bmp): 35-60 | Casing Diameter (in.): 4 | Well Material: X PVC, SS

Static Water Level (ft-bmp): 19.57 | Total Depth (ft-bmp): 60 | Water Column: 40.43 | Gallons in Well: 26.28

MP Elevation | Pump Intake (ft-bmp): 48 | Purge Method: Low Flow | Sample Method: Low Flow

Pump On: 15:00 | Volumes Purged: 0.26 | Centrifugal | Submersible: X | Other

Off: 15:53

Sample Time: Label: 15:50 | Gallons Purged: 6.75

Purge Start: 15:00 | Replicate/ Code No.: NA | Sampled by: S. Clark

Purge End: 15:35

Time	Minutes Elapsed	Rate (gpm) (mL/min)	Depth to Water (ft)	Gallons Purged	pH	Cond. (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temp. (°C)	Redox (mV)	Appearance	
											Color	Odor
15:00	0	NM	19.60	NM	7.19	1.60	NM	6.2	18.3	161	Yellow	None
15:05	5	640	19.60	0.85	7.08	1.60	32.0	5.16	17.9	44	Yellow	None
15:10	10	500	19.60	1.50	7.06	1.62	26.8	4.25	18.7	23	Yellow	None
15:15	15	480	19.60	2.15	7.01	1.66	24.7	3.65	19.3	-10	Yellow	None
15:20	20	620	19.60	2.95	7.04	1.65	24.5	2.97	19.1	-21	Yellow	None
15:25	25	700	19.60	3.85	7.07	1.64	22.1	2.97	19.1	-21	Yellow	None
15:30	30	680	19.60	4.75	7.10	1.63	20.4	2.95	18.7	-23	Yellow	None
13:35	35	620	19.60	5.55	7.14	1.63	19.7	2.85	18.7	-26	Yellow	None

Constituents Sampled	Container	Number	Preservative
VOCs	40 mL Glass Vial	3	HCl

Comments NM = Not Measured

Well Casing Volumes

Gallons/Foot: 1" = 0.04; 1.25" = 0.06; 1.5" = 0.09; 2" = 0.16; 2.5" = 0.26; 3" = 0.37; 3.5" = 0.50; 4" = 0.65; 6" = 1.47

Well Information

Well Location:	North Settling Lagoon	Well Locked at Arrival:	Yes
Condition of Well:	Good	Well Locked at Departure:	Yes
Well Completion:	Stick Up	Key Number To Well:	

ARCADIS Design & Consultancy for natural and built assets

Groundwater Sampling Form

Project No. 30018090.0004B | Well ID W-3-N | Date 7/9/2019

Project Name/Location Racer Trust-Moraine Ohio | Weather Sunny, 80s

Measuring Pt. Description: Top of Casing | Screen Setting (ft-bmp): 35-57 | Casing Diameter (in.): 4 | Well Material: X PVC, SS

Static Water Level (ft-bmp): 21.51 | Total Depth (ft-bmp): 57 | Water Column: 35.49 | Gallons in Well: 23.07

MP Elevation | Pump Intake (ft-bmp): 44.5 | Purge Method: Centrifugal, Submersible: X, Other | Sample Method: Low Flow

Pump On: 19:20 | Off: 20:38 | Volumes Purged: 0.43

Sample Time: Label 20:35 | Purge Start 19:15 | Purge End 20:20 | Gallons Purged: 10

Replicate/ Code No.: NA | Sampled by: S. Clark

Time	Minutes Elapsed	Rate (gpm) (mL/min)	Depth to Water (ft)	Gallons Purged	pH	Cond. (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temp. (°C)	Redox (mV)	Appearance	
											Color	Odor
19:20	0	NM	21.5	0	6.98	1.62	NM	0.43	15.5	-49	Tan	None
19:25	5	400	21.5	0.55	7.00	1.66	198	0.38	16.6	-57	Tan	None
19:30	10	460	21.5	1.15	7.00	1.66	211	0.36	16.6	-59	Tan	None
19:35	15	500	21.6	1.80	6.99	1.65	212	0.38	16.3	-67	Tan	None
19:40	20	680	21.6	2.70	6.97	1.64	213	0.40	16.0	-71	Tan	None
19:45	25	560	21.6	3.45	6.97	1.64	194	0.49	16.0	-72	Tan	None
19:50	30	560	21.6	4.20	6.98	1.65	175	0.51	16.2	-74	Tan	None
19:55	35	400	21.6	4.75	6.98	1.64	180	0.52	16.1	-74	Tan	None
20:00	40	500	21.6	5.40	6.98	1.64	166	0.47	16.0	-77	Tan	None
20:05	45	600	21.6	6.20	6.98	1.64	126	0.41	16.0	-80	Tan	None
20:10	50	600	21.6	7.00	6.98	1.64	105	0.42	15.9	-80	Tan	None
20:15	55	500	21.6	7.65	6.98	1.65	100	0.40	16.3	-80	Tan	None
20:20	60	400	21.6	8.20	6.98	1.65	93	0.40	16.4	-81	Tan	None

Constituents Sampled	Container	Number	Preservative
VOCs	40 mL Glass Vial	3	HCl

Comments

Well Casing Volumes

Gallons/Foot: 1" = 0.04; 1.25" = 0.06; 1.5" = 0.09; 2" = 0.16; 2.5" = 0.26; 3" = 0.37; 3.5" = 0.50; 4" = 0.65; 6" = 1.47

Well Information

Well Location:	North Settling Lagoon	Well Locked at Arrival:	Yes
Condition of Well:	Good	Well Locked at Departure:	Yes
Well Completion:	Stick Up	Key Number To Well:	

ARCADIS Design & Consultancy for natural and built assets

Groundwater Sampling Form

Project No. 30018090.0004B | Well ID W-4-N | Date 7/9/2019

Project Name/Location Racer Trust-Moraine Ohio | Weather Sunny, 80s

Measuring Pt. Description: Top of Casing | Screen Setting (ft-bmp): 40-65 | Casing Diameter (in.): 4 | Well Material: X PVC, SS

Static Water Level (ft-bmp): 19.33 | Total Depth (ft-bmp): 65 | Water Column: 45.67 | Gallons in Well: 29.69

MP Elevation | Pump Intake (ft-bmp): 52.5 | Purge Method: Low Flow | Sample Method: Low Flow

Pump On: 17:25 | Volumes Purged: 0.23 | Centrifugal | Submersible: X | Other

Off: 18:18

Sample Time: Label: 18:15 | Gallons Purged: 6.75

Purge Start: 17:25 | Replicate/ Code No.: NA | Sampled by: S. Clark

Purge End: 17:55

Time	Minutes Elapsed	Rate (gpm) (mL/min)	Depth to Water (ft)	Gallons Purged	pH	Cond. (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temp. (°C)	Redox (mV)	Appearance	
											Color	Odor
17:25	0	NM	19.3	NM	6.99	1.84	NM	0.55	15.9	21	Tan	None
17:30	5	1000	19.5	1.30	6.94	1.81	70	0.35	15.6	10	Tan	None
17:35	10	720	19.3	1.95	6.94	1.80	66	0.37	15.7	7	Tan	None
17:40	15	600	19.4	2.75	6.94	1.80	58	0.37	16.1	4	Tan	None
17:45	20	800	19.4	3.80	6.94	1.77	55	0.74	16.0	4	Tan	None
17:50	25	920	19.4	5.00	6.95	1.75	50	0.69	15.7	3	Tan	None
17:55	30	960	19.4	6.25	6.95	1.75	47	0.68	15.7	3	Tan	None

Constituents Sampled	Container	Number	Preservative
VOCs	40 mL Glass Vial	3	HCl

Comments NM = Not Measured

Well Casing Volumes

Gallons/Foot: 1" = 0.04; 1.25" = 0.06; 1.5" = 0.09; 2" = 0.16; 2.5" = 0.26; 3" = 0.37; 3.5" = 0.50; 4" = 0.65; 6" = 1.47

Well Information

Well Location:	North Settling Lagoon	Well Locked at Arrival:	Yes
Condition of Well:	Goood	Well Locked at Departure:	Yes
Well Completion:	Stick Up	Key Number To Well:	

ARCADIS Design & Consultancy for natural and built assets

Groundwater Sampling Form

Project No. 30018090.0004B | Well ID HR-17 | Date 7/9/2019

Project Name/Location Racer Trust-Moraine Ohio | Weather Sunny, 80s

Measuring Pt. Description: Top of Casing | Screen Setting (ft-bmp): 27-47 | Casing Diameter (in.): 4 | Well Material: X PVC, SS

Static Water Level (ft-bmp): 15.58 | Total Depth (ft-bmp): 56 | Water Column: 40.42 | Gallons in Well: 26.27

MP Elevation: | Pump Intake (ft-bmp): 37 | Purge Method: Low Flow | Sample Method: Low Flow

Pump On: 8:20 | Volumes Purged: 0.10 | Centrifugal: | Submersible: X | Other:

Off: 8:48

Sample Time: Label 8:45 | Gallons Purged: 2.53

Purge Start 8:20

Purge End 8:45

Replicate/ Code No.: NA | Sampled by: A. von Clausburg

Time	Minutes Elapsed	Rate (gpm) (mL/min)	Depth to Water (ft)	Gallons Purged	pH	Cond. (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temp. (°C)	Redox (mV)	Appearance	
											Color	Odor
08:25	5	200	15.58	0.25	7.18	1.168	15.5	0.75	17.7	158.4	Clear	NR
08:32	12	200	15.58	0.60	7.08	1.174	6.1	0.69	17.5	163.3	Clear	NR
08:35	15	300	15.58	0.84	7.03	1.175	5.9	0.62	17.0	162.8	Clear	NR
08:40	20	600	15.58	1.64	6.99	1.167	5.3	0.55	16.9	161.1	Clear	NR
08:45	25	600	15.58	2.44	6.99	1.168	5.1	0.48	16.8	161.4	Clear	NR

Constituents Sampled	Container	Number	Preservative
VOCs	40 mL Glass Vial	3	HCl

Comments NR = Not Recorded

Well Casing Volumes

Gallons/Foot					
	1" = 0.04	1.5" = 0.09	2.5" = 0.26	3.5" = 0.50	6" = 1.47
	1.25" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65	

Well Information

Well Location:	South Settlling Lagoon	Well Locked at Arrival:	Yes
Condition of Well:	Good	Well Locked at Departure:	Yes
Well Completion:	Stick Up	Key Number To Well:	

ARCADIS Design & Consultancy for natural and built assets

Groundwater Sampling Form

Project No. 30018090.0004B | Well ID W-2-S | Date 7/9/2019

Project Name/Location Racer Trust-Moraine Ohio | Weather Sunny, 85 °F

Measuring Pt. Description: Top of Casing | Screen Setting (ft-bmp): 30-65 | Casing Diameter (in.): 4 | Well Material: X PVC, SS

Static Water Level (ft-bmp): 16.95 | Total Depth (ft-bmp): 65 | Water Column: 48.05 | Gallons in Well: 31.23

MP Elevation: | Pump Intake (ft-bmp): 47 | Purge Method: Low Flow | Sample Method: Low Flow

Pump On: 16:00 | Volumes Purged: 0.07 | Centrifugal | Submersible: X | Other

Off: 16:33

Sample Time: Label 16:30 | Gallons Purged: 2.11

Purge Start: 16:00

Purge End: 16:30

Replicate/ Code No.: NA | Sampled by: A. von Clausburg

Time	Minutes Elapsed	Rate (gpm) (mL/min)	Depth to Water (ft)	Gallons Purged	pH	Cond. (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temp. (°C)	Redox (mV)	Appearance	
											Color	Odor
16:05	5	400	NM	0.55	7.04	1.238	1.36	0.27	16.7	181.3	Clear	NR
16:10	10	200	NM	0.80	6.92	1.394	8.70	9.11	18.3	187.2	Clear	NR
16:15	15	400	NM	1.35	6.92	1.240	1.83	0.57	17.2	180.8	Clear	NR
16:20	20	200	NM	1.60	6.87	1.239	0.88	0.71	17.2	164.9	Clear	NR
16:25	25	200	NM	1.85	6.86	1.236	1.83	0.99	17.5	156.3	Clear	NR
16:30	30	200	NM	2.10	6.85	1.240	0.94	0.53	17.2	160.5	Clear	NR

Constituents Sampled	Container	Number	Preservative
VOCs	40 mL Glass Vial	3	HCl

Comments NR = Not Recorded

Well Casing Volumes

Gallons/Foot: 1" = 0.04; 1.25" = 0.06; 1.5" = 0.09; 2" = 0.16; 2.5" = 0.26; 3" = 0.37; 3.5" = 0.50; 4" = 0.65; 6" = 1.47

Well Information

Well Location:	South Settlling Lagoon	Well Locked at Arrival:	Yes
Condition of Well:	Good	Well Locked at Departure:	Yes
Well Completion:	Stick Up	Key Number To Well:	

ARCADIS Design & Consultancy for natural and built assets

Groundwater Sampling Form

Project No. 30018090.0004B | Well ID W-3-S | Date 7/9/2019

Project Name/Location Racer Trust-Moraine Ohio | Weather Sunny, 80 °F

Measuring Pt. Description: Top of Casing | Screen Setting (ft-bmp): 36-76 | Casing Diameter (in.): 4 | Well Material: X PVC, SS

Static Water Level (ft-bmp): 19.31 | Total Depth (ft-bmp): 76 | Water Column: 56.69 | Gallons in Well: 36.8

MP Elevation | Pump Intake (ft-bmp): 56 | Purge Method: Low Flow | Sample Method: Low Flow

Pump On: 15:00 | Volumes Purged: 0.04 | Centrifugal | Submersible: X | Other

Off: 15:23

Sample Time: Label 15:20 | Gallons Purged: 1.65

Purge Start: 15:00

Purge End: 15:20

Replicate/ Code No.: NA | Sampled by: A. von Clausburg

Time	Minutes Elapsed	Rate (gpm) (mL/min)	Depth to Water (ft)	Gallons Purged	pH	Cond. (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temp. (°C)	Redox (mV)	Appearance	
											Color	Odor
15:00	0	300	NM	NM	7.13	1.145	3.3	0.23	15.8	175.8	Clear	NR
15:05	5	200	NM	0.25	7.06	1.141	8.3	0.28	15.9	174.1	Clear	NR
15:10	10	200	NM	0.50	6.98	1.143	0.66	0.24	16.5	163.3	Clear	NR
15:15	15	250	NM	0.85	6.87	1.145	0.56	0.25	16.3	151.6	Clear	NR
15:20	20	300	NM	1.25	6.85	1.144	0.35	0.22	16.3	147.6	Clear	NR

Constituents Sampled	Container	Number	Preservative
VOCs	40 mL Glass Vial	3	HCl

Comments NM = Not Measured

NR = Not Recorded

Well Casing Volumes

Gallons/Foot: 1" = 0.04; 1.25" = 0.06; 1.5" = 0.09; 2" = 0.16; 2.5" = 0.26; 3" = 0.37; 3.5" = 0.50; 4" = 0.65; 6" = 1.47

Well Information

Well Location:	South Settlling Lagoon	Well Locked at Arrival:	Yes
Condition of Well:	Good	Well Locked at Departure:	Yes
Well Completion:	Stick Up	Key Number To Well:	

ARCADIS Design & Consultancy for natural and built assets

Groundwater Sampling Form

Project No. 30018090.0004B | Well ID W-4-S | Date 7/9/2019

Project Name/Location Racer Trust-Moraine Ohio | Weather Cloudy, 80 °F

Measuring Pt. Description: Top of Casing | Screen Setting (ft-bmp): 30-70 | Casing Diameter (in.): 4 | Well Material: X PVC, SS

Static Water Level (ft-bmp): 17.65 | Total Depth (ft-bmp): 70 | Water Column: 52.35 | Gallons in Well: 34.0

MP Elevation: | Pump Intake (ft-bmp): 54 | Purge Method: Low Flow | Sample Method: Low Flow

Pump On: 13:10 | Volumes Purged: 0.09 | Centrifugal: | Submersible: X | Other:

Off: 13:43

Sample Time: Label 13:40 | Gallons Purged: 3

Purge Start: 13:10

Purge End: 13:40

Replicate/ Code No.: NA | Sampled by: A. von Clausburg

Time	Minutes Elapsed	Rate (gpm) (mL/min)	Depth to Water (ft)	Gallons Purged	pH	Cond. (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temp. (°C)	Redox (mV)	Appearance	
											Color	Odor
13:15	5	NM	NM	NM	7.09	1.274	10.0	0.31	15.6	199.0	Clear	NR
13:20	10	200	NM	0.25	7.02	1.271	7.78	0.22	16.6	192.4	Clear	NR
13:25	15	200	NM	0.50	6.96	1.27	7.01	0.24	15.8	181.8	Clear	NR
13:30	20	200	NM	0.75	6.86	1.272	9.01	0.26	16.2	171.6	Clear	NR
13:35	25	200	NM	1.00	6.87	1.271	8.91	0.21	16.4	153.7	Clear	NR
13:40	30	200	NM	1.25	6.82	1.275	9.01	0.20	15.9	130.2	Clear	NR

Constituents Sampled	Container	Number	Preservative
VOCs	40 mL Glass Vial	3	HCl

Comments NM = Not Measured

NR = Not Recorded

Well Casing Volumes

Gallons/Foot: 1" = 0.04; 1.25" = 0.06; 1.5" = 0.09; 2" = 0.16; 2.5" = 0.26; 3" = 0.37; 3.5" = 0.50; 4" = 0.65; 6" = 1.47

Well Information

Well Location:	South Settlling Lagoon	Well Locked at Arrival:	No
Condition of Well:	Poor	Well Locked at Departure:	No
Well Completion:	Stick Up	Key Number To Well:	

ATTACHMENT E-2

Ohio EPA eBusiness Excel Worksheet

NAME	FCID	ADDR1	ADDR2	CITY	STATE	ZIP	PHONE	CONTACT	LATITUDE	LONGITUDE	GEOG_ METHOD	NUM_ WELLS	COUNTY
Former Delphi Harrison Thermal Systems	OHD000817577	3600 Dryden Road		MORAINE	OH	45439	313.486.2908	Pam Barnett	39.6923750	-84.2261690	A	8	Montgomery

FACILITY	FCID	WELL_ID	DATUM	DEPTH	TOP_CAS_EL	TOP_SCR_EL	BOT_SCR_EL	GRAD_POSTN	CAS_MATERL	PIPE_DIA	COMMENT	SURFACE	LATITUDE	LONGITUDE	X_VAR	Y_VAR	GEOG_METH	ELEV_METHO	WELL_USE	WELL_LOG_T	DATE_INSTL	DPTH_INSTL	GWL_INSTL	GWElv_INSTL
Former Delph	OHD000817577	HR-04	MSL	66.80	742.60	685.61	675.61	U	PVC	2		740.61	39.7021650	-84.2220680			S	C	8A	M	07/15/83	66.80	41.00	699.61
Former Delph	OHD000817577	W-2-N	MSL	59.70	731.68	694.68	669.68	D	PVC	4		729.68	39.7001660	-84.2243360			S	C	8A	M	09/22/81	59.70	32.00	697.68
Former Delph	OHD000817577	W-3-N	MSL	57.60	733.66	699.98	674.98	D	PVC	4		731.98	39.6997120	-84.2234160			S	C	8A	M	09/09/81	57.60	25.50	706.48
Former Delph	OHD000817577	W-4-N	MSL	66.60	731.63	689.88	664.88	D	PVC	4		729.88	39.6996010	-84.2227460			S	C	8A	M	09/24/81	66.60	32.00	697.88
Former Delph	OHD000817577	HR-17	NAVD	59.55	725.42	697.70	677.70	U	PVC	4		724.70	39.6926330	-84.2262332			S	C	8A	M	11/13/89	59.55	20.87	704.53
Former Delph	OHD000817577	W-2-S	NAVD	67.00	725.67	694.38	659.38	D	PVC	4		724.38	39.6911509	-84.2288564			S	C	8A	M	09/21/81	67.00	35.50	689.51
Former Delph	OHD000817577	W-3-S	NAVD	76.40	728.16	690.20	650.20	D	PVC	4		726.20	39.6907577	-84.2283135			S	C	8A	M	09/23/81	76.40	41.00	686.54
Former Delph	OHD000817577	W-4-S	NAVD	72.50	726.76	695.51	655.61	D	PVC	4		725.61	39.6905106	-84.2269421			S	C	8A	M	09/28/81	72.50	37.50	689.16
Former Delph	OHD000817577	TRIP BLANK									Trip Blank date mark as 7/11/2019 with lab submittal and for samples collected on 7/09/2019.													
Former Delph	OHD000817577	DUP-1/070919/									Duplicate collected on 7/9/2019 with Parent HR-4.													
Former Delph	OHD000817577	EB-1/070919/									Equipment Blank collected 7/9/2019.													

FACILITY	FCID	SAMP_DATE	SAMP_SCHEM	COMMENT
Former Delphi Harrison Thermal Systems	OHD000817577	07/09/19	A	Annual Sampling Event - 07/09/19

FACILITY	FCID	NAME	UNITS	DET_LMT	ACL	MCL	METH_CODE
Former Delphi Harrison Thermal Systems	OHD000817577	111Tri	ug/l	0.24			8260B
Former Delphi Harrison Thermal Systems	OHD000817577	11-DCEE	ug/l	0.19			8260B
Former Delphi Harrison Thermal Systems	OHD000817577	11DCA	ug/l	0.17			8260B
Former Delphi Harrison Thermal Systems	OHD000817577	Benzene	ug/l	0.13			8260B
Former Delphi Harrison Thermal Systems	OHD000817577	EthBenz	ug/l	0.11			8260B
Former Delphi Harrison Thermal Systems	OHD000817577	TetCEthy	ug/l	0.75			8260B
Former Delphi Harrison Thermal Systems	OHD000817577	Toluen	ug/l	0.14			8260B
Former Delphi Harrison Thermal Systems	OHD000817577	TCE	ug/l	0.10			8260B
Former Delphi Harrison Thermal Systems	OHD000817577	VC	ug/l	0.20			8260B
Former Delphi Harrison Thermal Systems	OHD000817577	Xylene	ug/l	0.15			8260B
Former Delphi Harrison Thermal Systems	OHD000817577	CisDCEE	ug/l	0.16			8260B
Former Delphi Harrison Thermal Systems	OHD000817577	TranDCEE	ug/l	0.19			8260B
Former Delphi Harrison Thermal Systems	OHD000817577	pH F	SU	0.01			field
Former Delphi Harrison Thermal Systems	OHD000817577	GWL	feet	0.01			field
Former Delphi Harrison Thermal Systems	OHD000817577	Temp F	C	0.1			field
Former Delphi Harrison Thermal Systems	OHD000817577	Cond F	mS/cm	0.01			field
Former Delphi Harrison Thermal Systems	OHD000817577	Turb F	NTU	1			field
Former Delphi Harrison Thermal Systems	OHD000817577	Dis O2 F	mg/L	0.01			field
Former Delphi Harrison Thermal Systems	OHD000817577	ORP F	mV	1			field

FACILITY	FCID	WELL_ID	PARAMETER	SAMP_DATE	CHR_DATA	REAL_DATA	UNITS	DUP_CODE	REP_CODE	METH_CODE	DATA_QUAL
Former Delphi Harrison Thermal Systems	OHD000817577	HR-04	111Tri	07/09/19	2.30	2.30	ug/L	DUP		SW8260B	
Former Delphi Harrison Thermal Systems	OHD000817577	HR-04	11DCA	07/09/19	1.80	1.80	ug/L	DUP		SW8260B	
Former Delphi Harrison Thermal Systems	OHD000817577	HR-04	11-DCEE	07/09/19	ND<1.0	ND	ug/L	DUP		SW8260B	U
Former Delphi Harrison Thermal Systems	OHD000817577	HR-04	Benzene	07/09/19	ND<1.0	ND	ug/L	DUP		SW8260B	U
Former Delphi Harrison Thermal Systems	OHD000817577	HR-04	CisDCEE	07/09/19	0.62	0.62	ug/L	DUP		SW8260B	
Former Delphi Harrison Thermal Systems	OHD000817577	HR-04	EthBenz	07/09/19	ND<1.0	ND	ug/L	DUP		SW8260B	U
Former Delphi Harrison Thermal Systems	OHD000817577	HR-04	TCE	07/09/19	0.40	0.40	ug/L	DUP		SW8260B	
Former Delphi Harrison Thermal Systems	OHD000817577	HR-04	TetCEthy	07/09/19	0.26	0.26	ug/L	DUP		SW8260B	
Former Delphi Harrison Thermal Systems	OHD000817577	HR-04	Toluen	07/09/19	ND<1.0	ND	ug/L	DUP		SW8260B	U
Former Delphi Harrison Thermal Systems	OHD000817577	HR-04	TranDCEE	07/09/19	ND<1.0	ND	ug/L	DUP		SW8260B	U
Former Delphi Harrison Thermal Systems	OHD000817577	HR-04	VC	07/09/19	ND<1.0	ND	ug/L	DUP		SW8260B	U
Former Delphi Harrison Thermal Systems	OHD000817577	HR-04	Xylene	07/09/19	ND<2.0	ND	ug/L	DUP		SW8260B	U
Former Delphi Harrison Thermal Systems	OHD000817577	HR-04	111Tri	07/09/19	2.2	2.2	ug/L			SW8260B	
Former Delphi Harrison Thermal Systems	OHD000817577	HR-04	11DCA	07/09/19	1.7	1.7	ug/L			SW8260B	
Former Delphi Harrison Thermal Systems	OHD000817577	HR-04	11-DCEE	07/09/19	0.19	0.19	ug/L			SW8260B	J
Former Delphi Harrison Thermal Systems	OHD000817577	HR-04	Benzene	07/09/19	ND<1.0	ND	ug/L			SW8260B	U
Former Delphi Harrison Thermal Systems	OHD000817577	HR-04	CisDCEE	07/09/19	0.56	0.56	ug/L			SW8260B	J
Former Delphi Harrison Thermal Systems	OHD000817577	HR-04	EthBenz	07/09/19	ND<1.0	ND	ug/L			SW8260B	U
Former Delphi Harrison Thermal Systems	OHD000817577	HR-04	TCE	07/09/19	0.29	0.29	ug/L			SW8260B	J
Former Delphi Harrison Thermal Systems	OHD000817577	HR-04	TetCEthy	07/09/19	0.22	0.22	ug/L			SW8260B	J
Former Delphi Harrison Thermal Systems	OHD000817577	HR-04	Toluen	07/09/19	ND<1.0	ND	ug/L			SW8260B	U
Former Delphi Harrison Thermal Systems	OHD000817577	HR-04	TranDCEE	07/09/19	ND<1.0	ND	ug/L			SW8260B	U
Former Delphi Harrison Thermal Systems	OHD000817577	HR-04	VC	07/09/19	ND<1.0	ND	ug/L			SW8260B	U
Former Delphi Harrison Thermal Systems	OHD000817577	HR-04	Xylene	07/09/19	ND<2.0	ND	ug/L			SW8260B	U
Former Delphi Harrison Thermal Systems	OHD000817577	HR-04	pH F	07/09/19	6.96	6.96	SU			Field	
Former Delphi Harrison Thermal Systems	OHD000817577	HR-04	GWL	07/09/19	712.66	712.66	feet			Field	
Former Delphi Harrison Thermal Systems	OHD000817577	HR-04	Temp	07/09/19	16.0	16.0	C			Field	
Former Delphi Harrison Thermal Systems	OHD000817577	HR-04	Cond	07/09/19	1.42	1.42	ms/cm			Field	
Former Delphi Harrison Thermal Systems	OHD000817577	HR-04	Turb	07/09/19	7.9	7.9	NTU			Field	
Former Delphi Harrison Thermal Systems	OHD000817577	HR-04	DO	07/09/19	0.35	0.35	mg/L			Field	
Former Delphi Harrison Thermal Systems	OHD000817577	HR-04	Redox	07/09/19	91.7	91.7	mV			Field	
Former Delphi Harrison Thermal Systems	OHD000817577	HR-17	111Tri	07/09/19	7.4	7.4	ug/L			SW8260B	
Former Delphi Harrison Thermal Systems	OHD000817577	HR-17	11DCA	07/09/19	1.6	1.6	ug/L			SW8260B	
Former Delphi Harrison Thermal Systems	OHD000817577	HR-17	11-DCEE	07/09/19	0.54	0.54	ug/L			SW8260B	J
Former Delphi Harrison Thermal Systems	OHD000817577	HR-17	Benzene	07/09/19	ND<1.0	ND	ug/L			SW8260B	U
Former Delphi Harrison Thermal Systems	OHD000817577	HR-17	CisDCEE	07/09/19	1.2	1.2	ug/L			SW8260B	
Former Delphi Harrison Thermal Systems	OHD000817577	HR-17	EthBenz	07/09/19	ND<1.0	ND	ug/L			SW8260B	U
Former Delphi Harrison Thermal Systems	OHD000817577	HR-17	TCE	07/09/19	1.7	1.7	ug/L			SW8260B	
Former Delphi Harrison Thermal Systems	OHD000817577	HR-17	TetCEthy	07/09/19	150	150	ug/L			SW8260B	
Former Delphi Harrison Thermal Systems	OHD000817577	HR-17	Toluen	07/09/19	ND<1.0	ND	ug/L			SW8260B	U
Former Delphi Harrison Thermal Systems	OHD000817577	HR-17	TranDCEE	07/09/19	ND<1.0	ND	ug/L			SW8260B	U
Former Delphi Harrison Thermal Systems	OHD000817577	HR-17	VC	07/09/19	ND<1.0	ND	ug/L			SW8260B	U
Former Delphi Harrison Thermal Systems	OHD000817577	HR-17	Xylene	07/09/19	ND<2.0	ND	ug/L			SW8260B	U

FACILITY	FCID	WELL_ID	PARAMETER	SAMP_DATE	CHR_DATA	REAL_DATA	UNITS	DUP_CODE	REP_CODE	METH_CODE	DATA_QUAL
Former Delphi Harrison Thermal Systems	OHD000817577	HR-17	pH F	07/09/19	6.99	6.99	SU			Field	
Former Delphi Harrison Thermal Systems	OHD000817577	HR-17	GWL	07/09/19	709.84	709.84	feet			Field	
Former Delphi Harrison Thermal Systems	OHD000817577	HR-17	Temp	07/09/19	16.8	16.8	C			Field	
Former Delphi Harrison Thermal Systems	OHD000817577	HR-17	Cond	07/09/19	1.168	1.168	ms/cm			Field	
Former Delphi Harrison Thermal Systems	OHD000817577	HR-17	Turb	07/09/19	5.1	5.1	NTU			Field	
Former Delphi Harrison Thermal Systems	OHD000817577	HR-17	DO	07/09/19	0.48	0.48	mg/L			Field	
Former Delphi Harrison Thermal Systems	OHD000817577	HR-17	Redox	07/09/19	161.4	161.4	mV			Field	
Former Delphi Harrison Thermal Systems	OHD000817577	W-2-N	111Tri	07/09/19	ND<1.0	ND	ug/L			SW8260B	U
Former Delphi Harrison Thermal Systems	OHD000817577	W-2-N	11DCA	07/09/19	0.19	0.19	ug/L			SW8260B	J
Former Delphi Harrison Thermal Systems	OHD000817577	W-2-N	11-DCEE	07/09/19	ND<1.0	ND	ug/L			SW8260B	U
Former Delphi Harrison Thermal Systems	OHD000817577	W-2-N	Benzene	07/09/19	ND<1.0	ND	ug/L			SW8260B	U
Former Delphi Harrison Thermal Systems	OHD000817577	W-2-N	CisDCEE	07/09/19	1.8	1.8	ug/L			SW8260B	
Former Delphi Harrison Thermal Systems	OHD000817577	W-2-N	EthBenz	07/09/19	ND<1.0	ND	ug/L			SW8260B	U
Former Delphi Harrison Thermal Systems	OHD000817577	W-2-N	TCE	07/09/19	1.1	1.1	ug/L			SW8260B	
Former Delphi Harrison Thermal Systems	OHD000817577	W-2-N	TetCEthy	07/09/19	ND<1.0	ND	ug/L			SW8260B	U
Former Delphi Harrison Thermal Systems	OHD000817577	W-2-N	Toluen	07/09/19	ND<1.0	ND	ug/L			SW8260B	U
Former Delphi Harrison Thermal Systems	OHD000817577	W-2-N	TranDCEE	07/09/19	0.22	0.22	ug/L			SW8260B	J
Former Delphi Harrison Thermal Systems	OHD000817577	W-2-N	VC	07/09/19	ND<1.0	ND	ug/L			SW8260B	U
Former Delphi Harrison Thermal Systems	OHD000817577	W-2-N	Xylene	07/09/19	ND<2.0	ND	ug/L			SW8260B	U
Former Delphi Harrison Thermal Systems	OHD000817577	W-2-N	pH F	07/09/19	7.14	7.14	SU			Field	
Former Delphi Harrison Thermal Systems	OHD000817577	W-2-N	GWL	07/09/19	712.11	712.11	feet			Field	
Former Delphi Harrison Thermal Systems	OHD000817577	W-2-N	Temp	07/09/19	18.7	18.7	C			Field	
Former Delphi Harrison Thermal Systems	OHD000817577	W-2-N	Cond	07/09/19	1.63	1.63	ms/cm			Field	
Former Delphi Harrison Thermal Systems	OHD000817577	W-2-N	Turb	07/09/19	19.7	19.7	NTU			Field	
Former Delphi Harrison Thermal Systems	OHD000817577	W-2-N	DO	07/09/19	2.85	2.85	mg/L			Field	
Former Delphi Harrison Thermal Systems	OHD000817577	W-2-N	Redox	07/09/19	-26	-26	mV			Field	
Former Delphi Harrison Thermal Systems	OHD000817577	W-2-S	111Tri	07/09/19	0.60	0.60	ug/L			SW8260B	J
Former Delphi Harrison Thermal Systems	OHD000817577	W-2-S	11DCA	07/09/19	0.23	0.23	ug/L			SW8260B	J
Former Delphi Harrison Thermal Systems	OHD000817577	W-2-S	11-DCEE	07/09/19	ND<1.0	ND	ug/L			SW8260B	U
Former Delphi Harrison Thermal Systems	OHD000817577	W-2-S	Benzene	07/09/19	ND<1.0	ND	ug/L			SW8260B	U
Former Delphi Harrison Thermal Systems	OHD000817577	W-2-S	CisDCEE	07/09/19	0.29	0.29	ug/L			SW8260B	J
Former Delphi Harrison Thermal Systems	OHD000817577	W-2-S	EthBenz	07/09/19	ND<1.0	ND	ug/L			SW8260B	U
Former Delphi Harrison Thermal Systems	OHD000817577	W-2-S	TCE	07/09/19	2.8	2.8	ug/L			SW8260B	
Former Delphi Harrison Thermal Systems	OHD000817577	W-2-S	TetCEthy	07/09/19	20	20	ug/L			SW8260B	
Former Delphi Harrison Thermal Systems	OHD000817577	W-2-S	Toluen	07/09/19	ND<1.0	ND	ug/L			SW8260B	U
Former Delphi Harrison Thermal Systems	OHD000817577	W-2-S	TranDCEE	07/09/19	ND<1.0	ND	ug/L			SW8260B	U
Former Delphi Harrison Thermal Systems	OHD000817577	W-2-S	VC	07/09/19	ND<1.0	ND	ug/L			SW8260B	U
Former Delphi Harrison Thermal Systems	OHD000817577	W-2-S	Xylene	07/09/19	ND<2.0	ND	ug/L			SW8260B	U
Former Delphi Harrison Thermal Systems	OHD000817577	W-2-S	pH F	07/09/19	6.85	6.85	feet			Field	
Former Delphi Harrison Thermal Systems	OHD000817577	W-2-S	GWL	07/09/19	708.72	708.72	feet			Field	
Former Delphi Harrison Thermal Systems	OHD000817577	W-2-S	Temp	07/09/19	17.2	17.2	C			Field	
Former Delphi Harrison Thermal Systems	OHD000817577	W-2-S	Cond	07/09/19	1.240	1.240	ms/cm			Field	
Former Delphi Harrison Thermal Systems	OHD000817577	W-2-S	Turb	07/09/19	0.94	0.94	NTU			Field	

FACILITY	FCID	WELL_ID	PARAMETER	SAMP_DATE	CHR_DATA	REAL_DATA	UNITS	DUP_CODE	REP_CODE	METH_CODE	DATA_QUAL
Former Delphi Harrison Thermal Systems	OHD000817577	W-2-S	DO	07/09/19	0.53	0.53	mg/L			Field	
Former Delphi Harrison Thermal Systems	OHD000817577	W-2-S	Redox	07/09/19	160.5	160.5	mV			Field	
Former Delphi Harrison Thermal Systems	OHD000817577	W-3-N	111Tri	07/09/19	ND<1.0	ND	ug/L			SW8260B	U
Former Delphi Harrison Thermal Systems	OHD000817577	W-3-N	11DCA	07/09/19	ND<1.0	ND	ug/L			SW8260B	U
Former Delphi Harrison Thermal Systems	OHD000817577	W-3-N	11-DCEE	07/09/19	ND<1.0	ND	ug/L			SW8260B	U
Former Delphi Harrison Thermal Systems	OHD000817577	W-3-N	Benzene	07/09/19	ND<1.0	ND	ug/L			SW8260B	U
Former Delphi Harrison Thermal Systems	OHD000817577	W-3-N	CisDCEE	07/09/19	14	14	ug/L			SW8260B	
Former Delphi Harrison Thermal Systems	OHD000817577	W-3-N	EthBenz	07/09/19	ND<1.0	ND	ug/L			SW8260B	U
Former Delphi Harrison Thermal Systems	OHD000817577	W-3-N	TCE	07/09/19	ND<1.0	ND	ug/L			SW8260B	U
Former Delphi Harrison Thermal Systems	OHD000817577	W-3-N	TetCEthy	07/09/19	ND<1.0	ND	ug/L			SW8260B	U
Former Delphi Harrison Thermal Systems	OHD000817577	W-3-N	Toluen	07/09/19	ND<1.0	ND	ug/L			SW8260B	U
Former Delphi Harrison Thermal Systems	OHD000817577	W-3-N	TranDCEE	07/09/19	0.23	0.23	ug/L			SW8260B	J
Former Delphi Harrison Thermal Systems	OHD000817577	W-3-N	VC	07/09/19	0.81	0.81	ug/L			SW8260B	J
Former Delphi Harrison Thermal Systems	OHD000817577	W-3-N	Xylene	07/09/19	ND<2.0	ND	ug/L			SW8260B	U
Former Delphi Harrison Thermal Systems	OHD000817577	W-3-N	pH F	07/09/19	6.98	6.98	SU			Field	
Former Delphi Harrison Thermal Systems	OHD000817577	W-3-N	GWL	07/09/19	712.15	712.15	feet			Field	
Former Delphi Harrison Thermal Systems	OHD000817577	W-3-N	Temp	07/09/19	16.4	16.4	C			Field	
Former Delphi Harrison Thermal Systems	OHD000817577	W-3-N	Cond	07/09/19	1.65	1.65	ms/cm			Field	
Former Delphi Harrison Thermal Systems	OHD000817577	W-3-N	Turb	07/09/19	93	93	NTU			Field	
Former Delphi Harrison Thermal Systems	OHD000817577	W-3-N	DO	07/09/19	0.40	0.40	mg/L			Field	
Former Delphi Harrison Thermal Systems	OHD000817577	W-3-N	Redox	07/09/19	-81	-81	mV			Field	
Former Delphi Harrison Thermal Systems	OHD000817577	W-3-S	111Tri	07/09/19	2.5	2.5	ug/L			SW8260B	
Former Delphi Harrison Thermal Systems	OHD000817577	W-3-S	11DCA	07/09/19	0.83	0.83	ug/L			SW8260B	J
Former Delphi Harrison Thermal Systems	OHD000817577	W-3-S	11-DCEE	07/09/19	ND<1.0	ND	ug/L			SW8260B	U
Former Delphi Harrison Thermal Systems	OHD000817577	W-3-S	Benzene	07/09/19	ND<1.0	ND	ug/L			SW8260B	U
Former Delphi Harrison Thermal Systems	OHD000817577	W-3-S	CisDCEE	07/09/19	1.1	1.1	ug/L			SW8260B	
Former Delphi Harrison Thermal Systems	OHD000817577	W-3-S	EthBenz	07/09/19	ND<1.0	ND	ug/L			SW8260B	U
Former Delphi Harrison Thermal Systems	OHD000817577	W-3-S	TCE	07/09/19	5.6	5.6	ug/L			SW8260B	
Former Delphi Harrison Thermal Systems	OHD000817577	W-3-S	TetCEthy	07/09/19	81	81	ug/L			SW8260B	
Former Delphi Harrison Thermal Systems	OHD000817577	W-3-S	Toluen	07/09/19	ND<1.0	ND	ug/L			SW8260B	U
Former Delphi Harrison Thermal Systems	OHD000817577	W-3-S	TranDCEE	07/09/19	ND<1.0	ND	ug/L			SW8260B	U
Former Delphi Harrison Thermal Systems	OHD000817577	W-3-S	VC	07/09/19	ND<1.0	ND	ug/L			SW8260B	U
Former Delphi Harrison Thermal Systems	OHD000817577	W-3-S	Xylene	07/09/19	ND<2.0	ND	ug/L			SW8260B	U
Former Delphi Harrison Thermal Systems	OHD000817577	W-3-S	pH F	07/09/19	6.85	6.85	SU			Field	
Former Delphi Harrison Thermal Systems	OHD000817577	W-3-S	GWL	07/09/19	708.85	708.85	feet			Field	
Former Delphi Harrison Thermal Systems	OHD000817577	W-3-S	Temp	07/09/19	16.3	16.3	C			Field	
Former Delphi Harrison Thermal Systems	OHD000817577	W-3-S	Cond	07/09/19	1.144	1.144	ms/cm			Field	
Former Delphi Harrison Thermal Systems	OHD000817577	W-3-S	Turb	07/09/19	0.35	0.35	NTU			Field	
Former Delphi Harrison Thermal Systems	OHD000817577	W-3-S	DO	07/09/19	0.22	0.22	mg/L			Field	
Former Delphi Harrison Thermal Systems	OHD000817577	W-3-S	Redox	07/09/19	147.6	147.6	mV			Field	
Former Delphi Harrison Thermal Systems	OHD000817577	W-4-N	111Tri	07/09/19	ND<1.0	ND	ug/L			SW8260B	U
Former Delphi Harrison Thermal Systems	OHD000817577	W-4-N	11DCA	07/09/19	7.6	7.6	ug/L			SW8260B	
Former Delphi Harrison Thermal Systems	OHD000817577	W-4-N	11-DCEE	07/09/19	ND<1.0	ND	ug/L			SW8260B	U

FACILITY	FCID	WELL_ID	PARAMETER	SAMP_DATE	CHR_DATA	REAL_DATA	UNITS	DUP_CODE	REP_CODE	METH_CODE	DATA_QUAL
Former Delphi Harrison Thermal Systems	OHD000817577	W-4-N	Benzene	07/09/19	ND<1.0	ND	ug/L			SW8260B	U
Former Delphi Harrison Thermal Systems	OHD000817577	W-4-N	CisDCEE	07/09/19	6.6	6.6	ug/L			SW8260B	
Former Delphi Harrison Thermal Systems	OHD000817577	W-4-N	EthBenz	07/09/2019	ND<1.0	ND	ug/L			SW8260B	U
Former Delphi Harrison Thermal Systems	OHD000817577	W-4-N	TCE	07/09/19	9.2	9.2	ug/L			SW8260B	
Former Delphi Harrison Thermal Systems	OHD000817577	W-4-N	TetCEthy	07/09/19	0.72	0.72	ug/L			SW8260B	J
Former Delphi Harrison Thermal Systems	OHD000817577	W-4-N	Toluen	07/09/2019	ND<1.0	ND	ug/L			SW8260B	U
Former Delphi Harrison Thermal Systems	OHD000817577	W-4-N	TranDCEE	07/09/19	0.88	0.88	ug/L			SW8260B	J
Former Delphi Harrison Thermal Systems	OHD000817577	W-4-N	VC	07/09/19	ND<1.0	ND	ug/L			SW8260B	U
Former Delphi Harrison Thermal Systems	OHD000817577	W-4-N	Xylene	07/09/19	ND<2.0	ND	ug/L			SW8260B	U
Former Delphi Harrison Thermal Systems	OHD000817577	W-4-N	pH F	07/09/19	6.95	6.95	SU			Field	
Former Delphi Harrison Thermal Systems	OHD000817577	W-4-N	GWL	07/09/19	712.30	712.30	feet			Field	
Former Delphi Harrison Thermal Systems	OHD000817577	W-4-N	Temp	07/09/19	15.7	15.7	C			Field	
Former Delphi Harrison Thermal Systems	OHD000817577	W-4-N	Cond	07/09/19	1.75	1.75	ms/cm			Field	
Former Delphi Harrison Thermal Systems	OHD000817577	W-4-N	Turb	07/09/19	47	47	NTU			Field	
Former Delphi Harrison Thermal Systems	OHD000817577	W-4-N	DO	07/09/19	0.68	0.68	mg/L			Field	
Former Delphi Harrison Thermal Systems	OHD000817577	W-4-N	Redox	07/09/19	3	3	mV			Field	
Former Delphi Harrison Thermal Systems	OHD000817577	W-4-S	111Tri	07/09/19	1.7	1.7	ug/L			SW8260B	
Former Delphi Harrison Thermal Systems	OHD000817577	W-4-S	11DCA	07/09/19	1.6	1.6	ug/L			SW8260B	
Former Delphi Harrison Thermal Systems	OHD000817577	W-4-S	11-DCEE	07/09/19	ND<1.0	ND	ug/L			SW8260B	U
Former Delphi Harrison Thermal Systems	OHD000817577	W-4-S	Benzene	07/09/19	ND<1.0	ND	ug/L			SW8260B	U
Former Delphi Harrison Thermal Systems	OHD000817577	W-4-S	CisDCEE	07/09/19	13	13	ug/L			SW8260B	
Former Delphi Harrison Thermal Systems	OHD000817577	W-4-S	EthBenz	07/09/19	ND<1.0	ND	ug/L			SW8260B	U
Former Delphi Harrison Thermal Systems	OHD000817577	W-4-S	TCE	07/09/19	33	33	ug/L			SW8260B	
Former Delphi Harrison Thermal Systems	OHD000817577	W-4-S	TetCEthy	07/09/19	70	70	ug/L			SW8260B	
Former Delphi Harrison Thermal Systems	OHD000817577	W-4-S	Toluen	07/09/19	ND<1.0	ND	ug/L			SW8260B	U
Former Delphi Harrison Thermal Systems	OHD000817577	W-4-S	TranDCEE	07/09/19	1.2	1.2	ug/L			SW8260B	U
Former Delphi Harrison Thermal Systems	OHD000817577	W-4-S	VC	07/09/19	ND<1.0	ND	ug/L			SW8260B	U
Former Delphi Harrison Thermal Systems	OHD000817577	W-4-S	Xylene	07/09/19	ND<2.0	ND	ug/L			SW8260B	U
Former Delphi Harrison Thermal Systems	OHD000817577	W-4-S	pH F	07/09/19	6.82	6.82	SU			Field	
Former Delphi Harrison Thermal Systems	OHD000817577	W-4-S	GWL	07/09/19	709.11	709.11	feet			Field	
Former Delphi Harrison Thermal Systems	OHD000817577	W-4-S	Temp	07/09/19	15.9	15.9	C			Field	
Former Delphi Harrison Thermal Systems	OHD000817577	W-4-S	Cond	07/09/19	1.28	1.28	ms/cm			Field	
Former Delphi Harrison Thermal Systems	OHD000817577	W-4-S	Turb	07/09/19	9.01	9.01	NTU			Field	
Former Delphi Harrison Thermal Systems	OHD000817577	W-4-S	DO	07/09/19	0.20	0.20	mg/L			Field	
Former Delphi Harrison Thermal Systems	OHD000817577	W-4-S	Redox	07/09/19	130.2	130.2	mV			Field	
Former Delphi Harrison Thermal Systems	OHD000817577	Trip Blank	111Tri	07/11/19	ND<1.0	ND	ug/L			SW8260B	U
Former Delphi Harrison Thermal Systems	OHD000817577	Trip Blank	11DCA	07/11/19	ND<1.0	ND	ug/L			SW8260B	U
Former Delphi Harrison Thermal Systems	OHD000817577	Trip Blank	11-DCEE	07/11/19	ND<1.0	ND	ug/L			SW8260B	U
Former Delphi Harrison Thermal Systems	OHD000817577	Trip Blank	Benzene	07/11/19	ND<1.0	ND	ug/L			SW8260B	U
Former Delphi Harrison Thermal Systems	OHD000817577	Trip Blank	CisDCEE	07/11/19	ND<1.0	ND	ug/L			SW8260B	U
Former Delphi Harrison Thermal Systems	OHD000817577	Trip Blank	EthBenz	07/11/19	ND<1.0	ND	ug/L			SW8260B	U
Former Delphi Harrison Thermal Systems	OHD000817577	Trip Blank	TCE	07/11/19	ND<1.0	ND	ug/L			SW8260B	U
Former Delphi Harrison Thermal Systems	OHD000817577	Trip Blank	TetCEthy	07/11/19	ND<1.0	ND	ug/L			SW8260B	U

FACILITY	FCID	WELL_ID	PARAMETER	SAMP_DATE	CHR_DATA	REAL_DATA	UNITS	DUP_CODE	REP_CODE	METH_CODE	DATA_QUAL
Former Delphi Harrison Thermal Systems	OHD000817577	Trip Blank	Toluen	07/11/19	ND<1.0	ND	ug/L			SW8260B	U
Former Delphi Harrison Thermal Systems	OHD000817577	Trip Blank	TranDCEE	07/11/19	ND<1.0	ND	ug/L			SW8260B	U
Former Delphi Harrison Thermal Systems	OHD000817577	Trip Blank	VC	07/11/19	ND<1.0	ND	ug/L			SW8260B	U
Former Delphi Harrison Thermal Systems	OHD000817577	Trip Blank	Xylene	07/11/19	ND<2.0	ND	ug/L			SW8260B	U
Former Delphi Harrison Thermal Systems	OHD000817577	EB-1	111Tri	07/09/19	ND<1.0	ND	ug/L			SW8260B	U
Former Delphi Harrison Thermal Systems	OHD000817577	EB-1	11DCA	07/09/19	ND<1.0	ND	ug/L			SW8260B	U
Former Delphi Harrison Thermal Systems	OHD000817577	EB-1	11-DCEE	07/09/19	ND<1.0	ND	ug/L			SW8260B	U
Former Delphi Harrison Thermal Systems	OHD000817577	EB-1	Benzene	07/09/19	ND<1.0	ND	ug/L			SW8260B	U
Former Delphi Harrison Thermal Systems	OHD000817577	EB-1	CisDCEE	07/09/19	ND<1.0	ND	ug/L			SW8260B	U
Former Delphi Harrison Thermal Systems	OHD000817577	EB-1	EthBenz	07/09/19	ND<1.0	ND	ug/L			SW8260B	U
Former Delphi Harrison Thermal Systems	OHD000817577	EB-1	TCE	07/09/19	ND<1.0	ND	ug/L			SW8260B	U
Former Delphi Harrison Thermal Systems	OHD000817577	EB-1	TetCEthy	07/09/19	ND<1.0	ND	ug/L			SW8260B	U
Former Delphi Harrison Thermal Systems	OHD000817577	EB-1	Toluen	07/09/19	ND<1.0	ND	ug/L			SW8260B	U
Former Delphi Harrison Thermal Systems	OHD000817577	EB-1	TranDCEE	07/09/19	ND<1.0	ND	ug/L			SW8260B	U
Former Delphi Harrison Thermal Systems	OHD000817577	EB-1	VC	07/09/19	ND<1.0	ND	ug/L			SW8260B	U
Former Delphi Harrison Thermal Systems	OHD000817577	EB-1	Xylene	07/09/19	ND<2.0	ND	ug/L			SW8260B	U

ATTACHMENT E-3

Laboratory Data Review Report

OHIO EPA
SUPPLEMENTARY ANNUAL REPORT
FOR 2019 GROUNDWATER
MONITORING DATA

February 25, 2020

Prepared by Arcadis

I certify under penalty of law that the groundwater sample data provided in this report, to the best of my knowledge and belief, is representative, valid, and usable for its intended purpose. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

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Pamela L. Barnett
Cleanup Manager
RACER Trust

ARCADIS Design & Consultancy for natural and built assets

RACER TRUST

DATA REVIEW

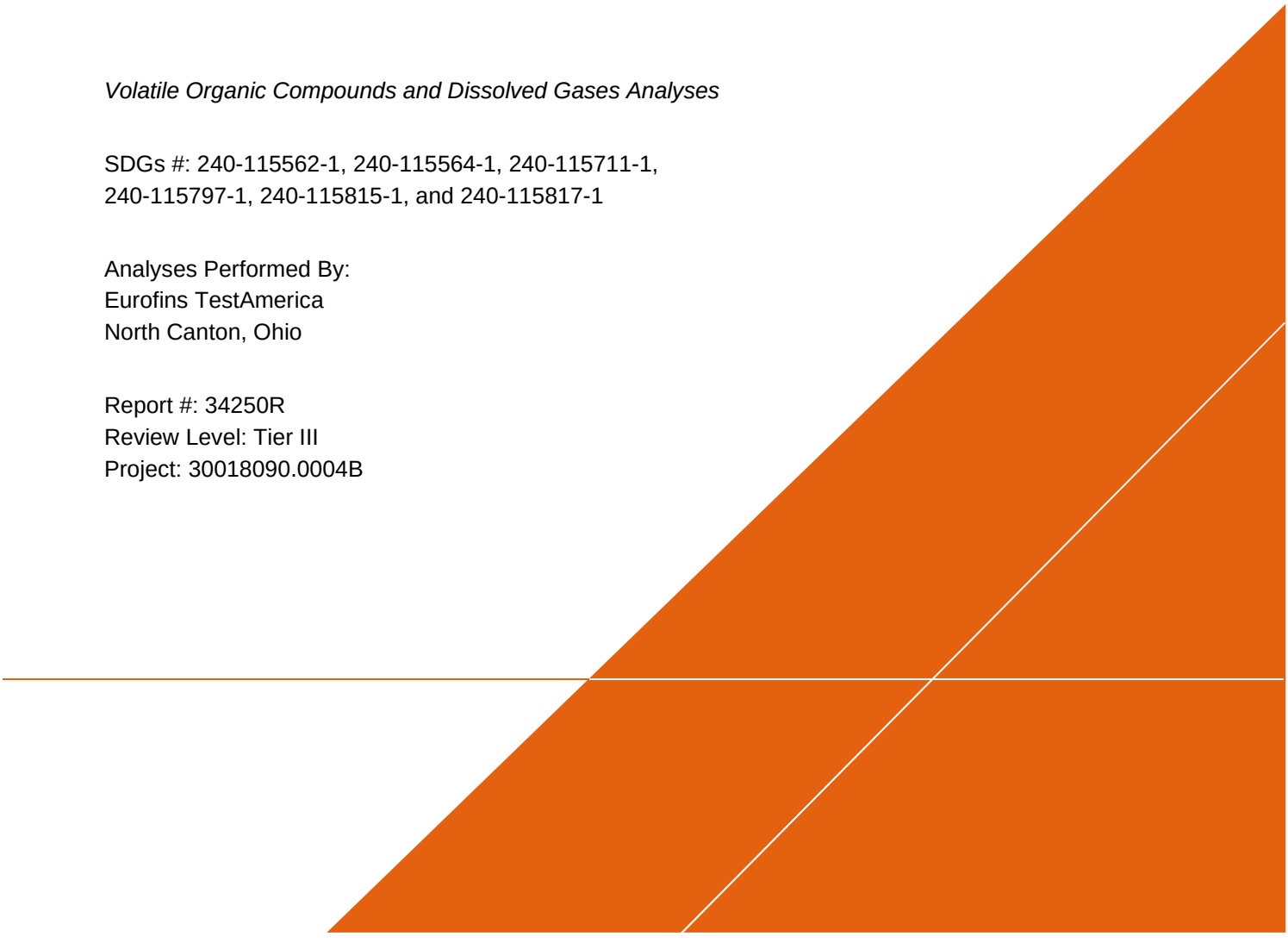
Moraine, Ohio

Volatile Organic Compounds and Dissolved Gases Analyses

SDGs #: 240-115562-1, 240-115564-1, 240-115711-1,
240-115797-1, 240-115815-1, and 240-115817-1

Analyses Performed By:
Eurofins TestAmerica
North Canton, Ohio

Report #: 34250R
Review Level: Tier III
Project: 30018090.0004B



SUMMARY

This data quality assessment summarizes the review of Sample Delivery Groups (SDGs) 240-115562-1, 240-115564-1, 240-115711-1, 240-115797-1, 240-115815-1, and 240-115817-1 for samples collected in association with the RACER Trust site in Moraine, Ohio. The review was conducted as a Tier III evaluation and included review of data package completeness as required under USEPA Region III M3 validation. Only analytical data as reported by the laboratory were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain-of-custody records (COCs). Analyses were performed on the following samples:

SDG	Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis				
						VOC	SVOC	MET	Diss. Gas	MISC
2401155621	GM-16/070819/	240-115562-1	Water	7/8/2019		X				
	RMW-102/070819/	240-115562-2	Water	7/8/2019		X				
	GM-15/070819/	240-115562-3	Water	7/8/2019		X				
	HR-17/070919/	240-115562-4	Water	7/9/2019		X				
	HR-16/070919/	240-115562-5	Water	7/9/2019		X				
	EB-02/070819/	240-115562-6	Water	7/8/2019		X				
2401155641	RMW-101/070819/	240-115564-1	Water	7/8/2019		X				
	RMW-100/070819/	240-115564-2	Water	7/8/2019		X				
	EB-1/070919/	240-115564-3	Water	7/9/2019		X				
2401157111	W-4-S/070919/	240-115711-1	Water	7/9/2019		X				
	W-3-S/070919/	240-115711-2	Water	7/9/2019		X				
	W-2-S/070919/	240-115711-3	Water	7/9/2019		X				
	GM-50/071019/	240-115711-4	Water	7/10/2019		X				
	GM-47/071019/	240-115711-5	Water	7/10/2019		X				
	GM-51/071019/	240-115711-6	Water	7/10/2019		X				
	GM-49/071019/	240-115711-7	Water	7/10/2019		X				
	GM-52/071019/	240-115711-8	Water	7/10/2019		X				
	GM-48/071019/	240-115711-9	Water	7/10/2019		X				
	EB-2/071019/	240-115711-10	Water	7/10/2019		X				
	HR-4/070919/	240-115711-11	Water	7/9/2019		X				
	W-2-N/070919/	240-115711-12	Water	7/9/2019		X				
	W-3-N/070919/	240-115711-13	Water	7/9/2019		X				
	W-4-N/070919/	240-115711-14	Water	7/9/2019		X				
	EB-1/071019/	240-115711-15	Water	7/10/2019		X				
	GM-63/071019/	240-115711-16	Water	7/10/2019		X				
	GM-64/071019/	240-115711-17	Water	7/10/2019		X				
	RMW-98/071019/	240-115711-18	Water	7/10/2019		X				

SDG	Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis				
						VOC	SVOC	MET	Diss. Gas	MISC
2401157111	RMW-99/071019/	240-115711-19	Water	7/10/2019		X				
	WSU-23/071019/	240-115711-20	Water	7/10/2019		X				
	DUP-1/070919/	240-115711-21	Water	7/9/2019	HR-4 /070919/	X				
	TRIP BLANK	240-115711-22	Water	7/11/2019		X				
	EB-1/071119/	240-115711-23	Water	7/11/2019		X				
2401157971	RMW-91/071119/	240-115797-1	Water	7/11/2019		X				
	RMW-92/071119/	240-115797-2	Water	7/11/2019		X				
	RMW-93/071119/	240-115797-3	Water	7/11/2019		X				
	RMW-94/071119/	240-115797-4	Water	7/11/2019		X				
	GM-6/071119/	240-115797-5	Water	7/11/2019		X		X	X	X
	GM-19S/071219/	240-115797-6	Water	7/12/2019		X		X	X	X
	DUP-2/071119/	240-115797-7	Water	7/11/2019	RMW-91 /071119/	X				
	EB-2/071119/	240-115797-8	Water	7/11/2019		X				
	GM-8/071119/	240-115797-9	Water	7/11/2019		X		X	X	X
	GM-32/071119/	240-115797-10	Water	7/11/2019		X				X
	DN-13/071119/	240-115797-11	Water	7/11/2019		X				
	GM-9/071119	240-115797-12	Water	7/11/2019		X				
	GM-20D/071119	240-115797-13	Water	7/11/2019		X				
	GM-2/071219	240-115797-14	Water	7/12/2019		X		X	X	X
	EB-1/071219/	240-115797-15	Water	7/12/2019		X				
	TRIP BLANK	240-115797-16	Water	7/12/2019		X				
2401158151	GM-29/071219/	240-115815-1	Water	7/12/2019		X		X	X	X
	GM-27/071219/	240-115815-2	Water	7/12/2019		X		X	X	X
	GM-21/071219/	240-115815-3	Water	7/12/2019		X		X	X	X
	GM-23/071219/	240-115815-4	Water	7/12/2019		X		X	X	X
	EB-2/071219/	240-115815-5	Water	7/12/2019		X		X	X	X
	TRIP BLANK	240-115815-6	Water	7/12/2019		X				
2401158171	GM-28R/071219/	240-115817-1	Water	7/12/2019		X		X	X	X
	DUP-3/071219	240-115817-2	Water	7/12/2019	GM-28R /071219/	X		X	X	X
	TRIP BLANK	240-115817-3	Water	7/12/2019		X				

Notes: 1. As specified on the COCs, samples HR-4/070919/, RMW-91/071119/, and GM-28R/071219/ were used in the MS/MSD analyses.

2. Dissolved gases analysis was performed by Pace Analytical in Pittsburgh, Pennsylvania and was reported as SDG 30876.

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of quality assurance (QA) or sample problems provided		X		X	
12. Data package completeness and compliance		X		X	

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260B and Pace Analytical method AM20GAX (modified USEPA Method RSK175). Data were reviewed in accordance with USEPA National Functional Guidelines for Organic Data Review (October 1999) and Quality Assurance Project Plan (QAPP) for Motors Liquidation Company (MLC) Moraine Facilities (November 19, 2010).

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers
  - U The compound was analyzed for but not detected. The associated value is the compound quantitation limit.
  - B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.
- Quantitation (Q) Qualifiers
  - E The compound was quantitated above the calibration range.
  - D Concentration is based on a diluted sample analysis.
- Validation Qualifiers
  - J The compound was positively identified; however, the associated numerical value is an estimated concentration only.
  - UJ The compound was not detected above the reported sample quantitation limit. However, the reported limit is approximate and may or may not represent the actual limit of quantitation.
  - JN The analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification. The associated numerical value is an estimated concentration only.
  - UB Compound considered non-detect at the listed value due to associated blank contamination.
  - N The analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification.
  - R The sample results are rejected as unusable. The compound may or may not be present in the sample.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on

data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data, but any value potentially contains error.

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260B	Water	14 days from collection to analysis (preserved)	Cool to < 6 °C; pH < 2 with HCl
		7 days from collection to analysis (unpreserved)	Cool to < 6 °C

All samples were analyzed within the specified holding time criteria.

2. Blank Contamination

Quality assurance (QA) blanks (i.e. laboratory method blanks and field blanks) are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Field blanks also measure contamination of samples during field operations.

A blank action level (BAL) of five times the concentration of a detected compound in an associated blank (common laboratory contaminant compounds are calculated at ten times) is calculated for QA blanks containing concentrations greater than the method detection limit (MDL). The BAL is compared to the associated sample results to determine the appropriate qualification of the sample results, if needed.

Target compounds were not detected above the MDL in the associated blanks; therefore, detected sample results are not associated with blank contamination.

3. Mass Spectrometer Tuning

GC/MS tuning is performed to ensure mass resolution, identification, and to some degree, sensitivity. The tuning compound (4-bromofluorobenzene) analysis must be performed at the beginning of each 12-hour period during which calibration standards and samples are analyzed and must meet the ion-abundance criteria specified in the analytical method.

GC/MS performance was acceptable, and all analyses were initiated within 12 hours of each instrument tune check.

4. Calibration

Satisfactory instrument calibration is established to ensure that the instrument can produce acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable (linear or quadratic) performance at the beginning of the analytical sequence. The continuing calibration verifies that the day-to-day instrument performance is satisfactory.

4.1 Initial Calibration (ICV)

Each target compound in the initial calibration must exhibit a relative response factor (RRF) greater than the control limit of 0.05 (0.01 for poor-performing compounds e.g. ketones) and either a percent relative standard deviation (%RSD) within the control limit of 20% or a correlation coefficient greater than 0.99.

All compounds associated with the initial calibration were within the specified control limits.

4.2 Continuing Calibration (CCV)

Each target compound associated with the continuing calibration standard must exhibit a percent difference (%D) within the control limit of 20%, and a RRF value greater than control limit (0.05 or 0.01).

All compounds associated with the continuing calibrations were within the specified control limits.

5. Surrogates/System Monitoring Compounds

All samples to be analyzed for organic compounds are spiked with surrogate compounds prior to sample preparation to evaluate overall laboratory performance and efficiency of the analytical technique. VOC analysis requires that all surrogates associated with the analysis exhibit recoveries within the laboratory-established acceptance limits.

All samples exhibited surrogate recoveries within the control limits.

6. Internal Standard Performance

Internal standard performance criteria insure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC analysis exhibit area counts that are within a factor of two (i.e. 50% - 200%) of the area counts of the associated continuing calibration standard.

All internal standard area counts were within the control limits.

7. Matrix Spike / Matrix Spike Duplicate (MS/MSD) Analysis

MS/MSD data are used to assess the precision and accuracy of the analytical method. The spiked compounds used in the MS/MSD analysis must exhibit recoveries within the laboratory-established acceptance limits. The relative percent difference (RPD) between the MS and MSD results must be within the laboratory-established acceptance limits.

Note: The MS/MSD recovery control limits do not apply for MS/MSDs performed on samples where the compound concentration detected in the parent sample exceeds the MS/MSD spiking concentration by a factor of four or greater. Sample results associated with MS/MSD exceedances where the parent samples are not site-specific are not qualified.

Samples HR-4/070919/, RMW-91/071119/, and GM-28R/071219/ were used in the MS/MSD analyses. All compounds associated with the MS/MSD analyses exhibited acceptable recoveries and RPDs.

8. Laboratory Control Sample (LCS) Analysis

The LCS analysis is used to assess the accuracy of the analytical method independent of matrix interferences. The spiked compounds used in the LCS analysis must exhibit recoveries within the laboratory-established acceptance limits.

All compounds associated with the LCS analyses exhibited recoveries within the control limits.

9. Field Duplicate Sample Analysis

The field duplicate analysis is used to assess the precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to five times the RL, a control limit of two times the RL is applied to the difference between the results for water matrices.

Detected results for the field duplicate sample results are summarized in the following tables.

Sample and Field Duplicate Sample: HR-4/070919/ and DUP-1/070919/						
Compound	Sample Result	Duplicate Result	RPD	Difference	RL	Evaluation
1,1,1-Trichloroethane	2.2	2.3	4.4 %	0.1	1.0	Acceptable
1,1-Dichloroethane	1.7	1.8	5.7 %	0.1	1.0	Acceptable
1,1-Dichloroethene	0.19 J	1.0 U	N/A	0.81	1.0	Acceptable
cis-1,2-Dichloroethene	0.56 J	0.62 J	10.2 %	0.06	1.0	Acceptable
Tetrachloroethene	0.22 J	0.26 J	16.7 %	0.04	1.0	Acceptable
Trichloroethene	0.29 J	0.40 J	31.9 %	0.11	1.0	Acceptable

Sample and Field Duplicate Sample: RMW-91/071119/ and DUP-2/071119/						
Compound	Sample Result	Duplicate Result	RPD	Difference	RL	Evaluation
1,1,1-Trichloroethane	1.8 J	1.8 J	0.0 %	0.0	5.0	Acceptable
1,1-Dichloroethane	2.5 J	2.5 J	0.0 %	0.0	5.0	Acceptable
cis-1,2-Dichloroethene	25	25	0.0 %	0.0	5.0	Acceptable
Tetrachloroethene	130	130	0.0 %	0.0	5.0	Acceptable
trans-1,2-Dichloroethene	2.3 J	2.2 J	4.4 %	0.1	5.0	Acceptable
Trichloroethene	62	67	7.8 %	5.0	5.0	Acceptable

Sample and Field Duplicate Sample: GM-28R/071219/ and DUP-3/071219						
Compound	Sample Result	Duplicate Result	RPD	Difference	RL	Evaluation
cis-1,2-Dichloroethene	1.1	1.1	0.0 %	0.0	1.0	Acceptable
Tetrachloroethene	13	13	0.0 %	0.0	1.0	Acceptable
Trichloroethene	0.35 J	0.32 J	9.0 %	0.03	1.0	Acceptable

Notes: N/A = Not applicable
U = Not detected
J = Estimated (result is < RL)

The field duplicate samples exhibited acceptable results.

10. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR VOCS

VOCs: SW-846 8260B	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
Gas Chromatography/Mass Spectrometry (GC/MS)					
Tier II Validation					
Holding Times		X		X	
Reporting Limits (Units)		X		X	
Blanks					
A. Method Blanks		X		X	
B. Equipment/Field Blanks		X		X	
C. Trip Blanks		X		X	
Surrogates Accuracy (%R)		X		X	
Matrix Spike (MS) %R		X		X	
Matrix Spike Duplicate (MSD) %R		X		X	
MS/MSD Precision (RPD)		X		X	
Laboratory Control Sample (LCS) %R		X		X	
Laboratory Control Sample Duplicate (LCSD) %R		X		X	
LCS/LCSD Precision (RPD)		X		X	
Laboratory Duplicate Sample RPD	X				X
Field Duplicate Sample RPD		X		X	
Dilution Factor		X		X	
Tier III Validation					
System Performance and Column Resolution		X		X	
Initial Calibration %RSD		X		X	
Continuing Calibration RRF		X		X	
Continuing Calibration %D		X		X	
Instrument Tune and Performance Check		X		X	
Ion Abundance Criteria for Each Instrument Used		X		X	
Internal Standard		X		X	
Compound Identification and Quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Quantitation transcriptions/calculations		X		X	
E. Reporting limits adjusted for sample dilutions		X		X	

%R - Percent recovery
RPD - Relative percent difference
%RSD - Relative standard deviation
%D - Percent difference

DISSOLVED GASES ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
Dissolved Gases by AM20GAX	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Blank Contamination

Quality assurance (QA) blanks (i.e., method and rinse blanks) are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Rinse blanks measure contamination of samples during field operations.

A blank action level (BAL) of five times the concentration of a detected compound in an associated blank (common laboratory contaminant compounds are calculated at ten times) is calculated for QA blanks containing concentrations greater than the method detection limit (MDL). The BAL is compared to the associated sample results to determine the appropriate qualification of the sample results, if needed.

Target compounds were detected in the equipment blank. Sample results that were less than the BAL were qualified as listed in the following table.

Sample	Analyte	Sample Result	Qualification
GM-2/071219	Ethene	Detected sample results < reporting limit (RL) and < BAL	"UB" at the RL

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument can produce acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable (linear or quadratic) performance at the beginning of the analytical sequence. The continuing calibration verifies that the day-to-day instrument performance is satisfactory.

3.1 Initial Calibration (ICV)

Each target compound in the initial calibration must exhibit a percent relative standard deviation (%RSD) within the control limit of 20% or a correlation coefficient greater than 0.99.

All compounds associated with the initial calibration were within the specified control limits.

3.2 Continuing Calibration (CCV)

Each target compound associated with the continuing calibration standard must exhibit a percent difference (%D) within the control limit of 20%.

All compounds associated with the continuing calibrations were within the specified control limits.

4. Matrix Spike/Matrix Spike Duplicate (MS/MSD) Analysis

MS/MSD data are used to assess the precision and accuracy of the analytical method. The compounds used to perform the MS/MSD analysis must exhibit recoveries within the laboratory-established acceptance limits. The relative percent difference (RPD) between the MS and MSD results must be within the laboratory-established acceptance limits.

Note: The MS/MSD recovery control limits do not apply for MS/MSD performed on samples where the compound concentration detected in the parent sample exceeds the MS/MSD concentration by a factor of four or greater.

Sample GM-28R/071219/ was used in the MS/MSD analysis. All compounds associated with the MS/MSD analysis exhibited acceptable recoveries and RPDs.

5. Laboratory Control Sample/Laboratory Control Sample Duplicate (LCS/LCSD) Analysis

The LCS/LCSD analysis is used to assess the precision and accuracy of the analytical method independent of matrix interferences. The compounds associated with the LCS/LCSD analysis must exhibit a percent recovery within the laboratory-established acceptance limits.

All compounds associated with the LCS/LCSD analyses exhibited recoveries and RPDs within the control limits.

6. Field Duplicate Sample Analysis

The field duplicate analysis is used to assess the precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to five times the RL, a control limit of two times the RL is applied to the difference between the results for water matrices.

Results for the field duplicate sample results are summarized in the following table.

Sample and Field Duplicate Sample: GM-28R/071219/ and DUP-3/071219						
Compound	Sample Result	Duplicate Result	RPD	Difference	RL	Evaluation
Ethane	0.38	0.45	N/A	0.07	0.1	Acceptable
Ethene	0.082 J	0.038 J	N/A	0.044	0.1	Acceptable
Methane	740	880	17.3 %	N/A	0.5	Acceptable

Notes: N/A = Not applicable
U = Not detected
J = Estimated (result is < RL)

The field duplicate samples exhibited acceptable results.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR DISSOLVED GASES

Dissolved Gases: AM20GAX	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
Gas Chromatography/Thermal Conductivity Detector (GC/TCD)					
Tier II Validation					
Holding Times/Temperature/Preservation		X		X	
Reporting Limits (units)		X		X	
Blanks					
A. Method/Calibration Blanks		X		X	
B. Equipment and/or Field Blanks		X		X	
C. Trip Blanks	X				X
Matrix Spike Sample (MS) Accuracy (%R)		X		X	
Matrix Spike Duplicate Sample (MSD) %R		X		X	
MS/MSD Precision (RPD)		X		X	
Laboratory Control Sample (LCS) %R		X		X	
Laboratory Control Sample Duplicate (LCSD) %R		X		X	
LCS/LCSD RPD		X		X	
Laboratory Duplicate Sample RPD	X				X
Field Duplicate Sample RPD		X		X	
Dilution Factor		X		X	
Tier III Validation					
Initial Calibration %RSDs		X		X	
Continuing Calibration %Ds		X		X	
System Performance and Column Resolution		X		X	
Compound Identification and Quantitation					
A. Quantitation Reports		X		X	
B. RT of Sample Compounds Within Established RT Windows		X		X	
C. Transcription/Calculation Errors Present		X		X	
D. Reporting Limits adjusted for Sample Dilutions		X		X	

%R - Percent recovery
RPD - Relative percent difference
%RSD - Relative standard deviation
%D - Percent difference

INORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) Method 300.0, USEPA SW-846 Methods 6010B, 9060, and 9251, and Standard Methods (SM) 4500-S2-F. Data were reviewed in accordance with USEPA National Functional Guidelines for Inorganic Data Review (October 2004) and Quality Assurance Project Plan (QAPP) for Motors Liquidation Company (MLC) Moraine Facilities (November 19, 2010).

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and that it was already subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with the USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but not detected. The associated value is the analyte instrument detection limit.

  J The reported value was obtained from a reading less than the reporting limit (RL), but greater than or equal to the method detection limit (MDL).

- Quantitation (Q) Qualifiers

  E The reported value is estimated due to the presence of interference.

  N Spiked sample recovery is not within the control limits.

  * Duplicate analysis is not within the control limits.

- Validation Qualifiers

  J The analyte was positively identified; however, the associated numerical value is an estimated concentration only.

  UJ The analyte was not detected above the reporting limit. However, the reported limit is approximate and may or may not represent the actual limit of detection.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data, but any value potentially contains error.

METALS ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 6010B	Water	180 days from collection to analysis	Cool to < 6°C; pH < 2 with HNO_3
	Soil	180 days from collection to analysis	Cool to < 6°C

All samples were analyzed within the specified holding time criteria.

2. Blank Contamination

Quality assurance (QA) blanks (i.e. laboratory method blanks and equipment rinse blanks) are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Rinse blanks measure contamination of samples during field operations.

A blank action level (BAL) of five times the concentration of a detected compound in an associated blank is calculated for QA blanks containing concentrations greater than the method detection limit (MDL). The BAL is compared to the associated sample results to determine the appropriate qualification of the sample results, if needed.

Target analytes were detected in the blanks; however, most of the associated sample results were greater than the BAL or were non-detect. Sample results less than the (equipment blank) BAL associated with the following samples were qualified as listed in the following table.

Sample	Analyte	Sample Result	Qualification
GM-2/071219 GM-27/071219/	Total Iron	Detected sample results > reporting limit (RL) and < BAL	"UB" at detected sample concentration

3. Calibration

Satisfactory instrument calibration is established to provide that the instrument can produce acceptable quantitative data. An initial calibration demonstrates acceptable instrument response versus concentration at the beginning of an analytical sequence. The continuing calibrations verify that the instrument's response remains consistent.

3.1 Initial Calibration

The initial calibration must exhibit a correlation coefficient greater than 0.995. A technical review of the data applies limits to all analytes with no exceptions.

3.2 Continuing Calibration

All target analytes associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (10%) and must be analyzed before and after every ten samples.

All initial and continuing calibration verification standard recoveries were within the control limits.

3.3 Reporting Limit (RL) Check Standard

The RL check standard serves to verify the linearity of calibration of the analysis at the RL. The RL standard is not required for the analysis of aluminum (Al), barium (Ba), calcium (Ca), iron (Fe), magnesium (Mg), sodium (Na), and potassium (K). The criteria used to evaluate the RL standard analysis are presented below in the RL standards evaluation table.

All RL standard recoveries were within the control limits.

4. Matrix Spike/Matrix Spike Duplicate (MS/MSD) / Laboratory Duplicate Sample Analysis

MS/MSD and laboratory duplicate sample data are used to assess the precision and accuracy of the analytical method.

4.1 MS/MSD Analysis

All metal analytes must exhibit recoveries within the established acceptance limits of 75% to 125%. When MSDs are analyzed, the relative percent difference (RPD) between the MS and MSD results must be no greater than the established acceptance limit of 20% for water matrices and 35% for soil matrices. The MS/MSD control limits do not apply for MS/MSDs performed on samples where the analyte's concentration detected in the parent sample exceeds the MS/MSD spiking concentration by a factor of four or greater. In instance where this is true, the data will not be qualified and any laboratory qualifier (N) will be removed. Sample results associated with MS/MSD exceedances where the parent samples are not site-specific are not qualified.

Sample GM-28R/071219/ was used in the MS/MSD analyses. All analytes associated with the MS/MSD analyses exhibited acceptable recoveries and RPDs.

4.2 Laboratory Duplicate Sample Analysis

The laboratory duplicate sample relative percent difference (RPD) criterion is applied when parent and duplicate sample concentrations are greater than or equal to five times the RL. A control limit of 20% for water matrices and 35% for soil matrices is applied when the criteria above is true. In the instance when the parent and/or duplicate sample concentrations are less than or equal to five times the RL, a control limit of one times the RL is applied to the difference between the results for water matrices or two times the RL for soil matrices.

The laboratory duplicate sample analysis was not performed on a sample from within these SDGs.

5. Laboratory Control Sample (LCS) Analysis

The LCS analysis is used to assess the accuracy of the analytical method independent of matrix interferences. The analytes associated with the LCS analysis must exhibit recoveries between the control limits of 80% and 120%.

All analytes associated with the LCS analyses exhibited recoveries within the control limits.

6. Field Duplicate Sample Analysis

The field duplicate sample analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices and 50% for soil matrices is applied to the RPD between the parent sample and the field duplicate. In the case where the parent and duplicate sample concentrations are less than five times the reporting limit (RL), a control limit of two

times the RL for water matrices and three times the RL for soil matrices is applied to the difference between the results.

Results for the field duplicate samples are summarized in the following table.

Sample and Field Duplicate Sample: GM-28R/071219/ and DUP-3/071219						
Compound	Sample Result	Duplicate Result	RPD	Difference	RL	Evaluation
Total Iron	2900	3100	6.7 %	200	100	Acceptable
Dissolved Iron	2600	2300	12.2 %	300	100	Acceptable
Total Manganese	220	230	4.4 %	10	15	Acceptable
Dissolved Manganese	220	200	9.5 %	20	15	Acceptable

The field duplicate samples exhibited acceptable results.

7. Serial Dilution (SD) Analysis

The serial dilution analysis is used to assess if a significant physical or chemical interference exists due to sample matrix. Analytes exhibiting concentrations greater than 50 times the MDL in the undiluted sample are evaluated to determine if matrix interference exists. These analytes are required to have less than a 10% difference (%D) between sample results from the undiluted (parent) sample and results associated with the same sample analyzed with a five-fold dilution.

Sample GM-28R/071219/ was used in the serial dilution analysis. The serial dilution analysis exhibited acceptable results.

8. Assessment of Total versus Dissolved Results

The results for dissolved metal analytes should be less than 120% of the associated total metal result for those analytes that are at least five times the reporting limit (RL).

The calculated difference between the total and the dissolved sample results were within the control limit.

9. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR METALS

Metals: SW-846 6010B	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
Inductively Coupled Plasma - Atomic Emission Spectrometry (ICP-AE)					
Tier II Validation					
Holding Times		X		X	
Reporting limits (units)		X		X	
Blanks					
A. Instrument Blanks		X	X		
B. Method Blanks		X		X	
C. Equipment and/or Field Blanks		X	X		
Matrix Spike (MS) Accuracy (%R)		X		X	
Matrix Spike Duplicate (MSD) %R		X		X	
MS/MSD Precision (RPD)		X		X	
Laboratory Control Sample (LCS) %R		X		X	
Laboratory Control Sample Duplicate (LCSD) %R	X				X
LCS/LCSD RPD	X				X
Laboratory Duplicate Sample RPD	X				X
Field Duplicate Sample RPD		X		X	
ICP Serial Dilution %D		X		X	
Total vs. Dissolved		X		X	
Dilution Factor		X		X	
Tier III Validation					
Initial Calibration Verification		X		X	
Continuing Calibration Verification		X		X	
CRQL Check Standard		X		X	
ICP Interference Check		X		X	
ICP-MS Internal Standards		X		X	
Quantitation transcriptions/calculations		X		X	
Raw Data		X		X	
Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:
%R = Percent recovery
RPD = Relative percent difference
%D = Percent difference

GENERAL CHEMISTRY ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
Chloride by SW-846 9251	Water	28 days from collection to analysis	Cool to < 6 °C
Sulfate by USEPA 300.0	Water	28 days from collection to analysis	Cool to < 6 °C
Sulfide by SM 4500-S2-F	Water	7 days from collection to analysis	Zinc acetate; pH > 9
Total Organic Carbon (TOC) by SW-846 9060	Water	28 days from collection to analysis	Cool to < 6 °C; pH < 2

All samples were analyzed within the specified holding time criteria.

2. Blank Contamination

Quality assurance (QA) blanks (i.e. laboratory method blanks and equipment rinse blanks) are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Rinse blanks measure contamination of samples during field operations.

A blank action level (BAL) of five times the concentration of a detected compound in an associated blank is calculated for QA blanks containing concentrations greater than the method detection limit (MDL). The BAL is compared to the associated sample results to determine the appropriate qualification of the sample results, if needed.

Target analytes were detected in the associated QA blanks; however, the associated sample results were greater than the BAL or were non-detect. Therefore, no qualification of the sample results was required.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument can produce acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

The correct number and type of standards were analyzed. The correlation coefficient of the initial calibration was greater than 0.995 and all initial calibration verification standard recoveries were within the control limits.

4. Matrix Spike/Matrix Spike Duplicate (MS/MSD) and Laboratory Duplicate Sample Analysis

MS/MSD and laboratory duplicate sample data are used to assess the precision and accuracy of the analytical method.

4.1 MS/MSD Analysis

MS/MSD data are used to assess the precision and accuracy of the analytical method. All metal analytes must exhibit recoveries within the established acceptance limits of 75% to 125%. The relative percent difference (RPD) between the MS and MSD results must be no greater than the established acceptance

limit of 20%. The MS/MSD control limits do not apply for MS/MSDs performed on samples where the analyte's concentration detected in the parent sample exceeds the MS/MSD spiking concentration by a factor of four or greater. In instance where this is true, the data will not be qualified, and any laboratory qualifiers will be removed. Sample results associated with MS/MSD exceedances where the parent samples are not site-specific are not qualified.

Samples GM-29/071219/ and GM-28R/071219/ were used in the MS/MSD analyses. All analytes associated with the MS/MSD analyses exhibited acceptable recoveries and RPDs.

4.2 Laboratory Duplicate Sample Analysis

The laboratory duplicate sample RPD criterion is applied when parent and duplicate sample concentrations are at least five times the reporting limit (RL). A control limit of 20% for water matrices and 35% for soil and sediment matrices is applied when the criteria above is true. In the instance when the parent and/or duplicate sample concentrations are less than or equal to five times the RL, a control limit of one times the RL for water matrices and two times the RL for soil and sediment matrices is applied to the difference between the results.

MS/MSD analysis was performed in addition to the laboratory duplicate sample analysis. The MS/MSD and laboratory duplicate sample analyses exhibited acceptable RPDs.

5. Laboratory Control Sample (LCS) Analysis

The LCS analysis is used to assess the accuracy of the analytical method independent of matrix interferences. The analytes associated with the LCS analysis must exhibit recoveries between the control limits of 80% and 120%.

All analytes associated with the LCS analyses exhibited recoveries within the control limits.

6. Field Duplicate Sample Analysis

The field duplicate sample analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 35% for water matrices is applied to the RPDs between the parent sample and the field duplicate sample results. In the instance when the parent and/or duplicate sample concentrations are less than or equal to five times the RL, a control limit of two times the RL for water matrices is applied to the difference between the results.

Results for the field duplicate samples are summarized in the following tables.

Parent and Field Duplicate Samples: GM-28R/071219/ and DUP-3/071219						
Compound	Sample Result	Duplicate Result	RPD	Difference	RL	Evaluation
Sulfate	29	29	0.0 %	0.0	1.0	Acceptable
Sulfide	1.0 U	1.0 U	N/A	0.0	1.0	Acceptable

Note: N/A = Not applicable

The field duplicate samples exhibited acceptable results.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR GENERAL CHEMISTRY

General Chemistry: USEPA 300.0, SW-846 9060 and 9251, and SM 4500-S2-F	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
Miscellaneous Instrumentation					
Tier II Validation					
Holding Times		X		X	
Reporting Limits (Units)		X		X	
Blanks					
A. Instrument Blanks		X		X	
B. Method Blanks		X		X	
C. Equipment and/or Field Blanks		X	X		
Matrix Spike (MS) Accuracy (%R)		X		X	
Matrix Spike Duplicate (MSD) %R		X		X	
MS/MSD Precision (RPD)		X		X	
Laboratory Control Sample (LCS) %R		X		X	
Laboratory Control Sample Duplicate (LCSD) %R	X				X
LCS/LCSD RPD	X				X
Laboratory Duplicate Sample RPD		X		X	
Field Duplicate Sample RPD		X		X	
Dilution Factor		X		X	
Tier III Validation					
Initial calibration %RSD or correlation coefficient		X		X	
Continuing calibration %D		X		X	
Raw Data		X		X	
Transcription/calculation errors present		X		X	
Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:
%RSD – relative standard deviation
%R - percent recovery
RPD - relative percent difference
%D – difference

Validation Performed By: Dennis Dyke

Signature:

Date: November 5, 2019

CHAIN OF CUSTODY AND CORRECTED SAMPLE ANALYSIS DATA SHEETS

Eurofins TestAmerica, Canton
4101 Shuffel Street NW
North Canton, OH 44720
Phone: 330-497-9396 Fax: 330-497-0772

~~Columbus~~ 200

Chain of Custody Record

1.8/C1.9

eurofins | Environment Testing TestAmerica

Client Information	Sampler: Alex von Clausburg	Lab PM: DelMonico, Michael	Carrier Tracking No(s):	COC No: 240-62293-26457.1
Client Contact: Kari Eldridge	Phone: 614-634-0722	E-Mail: michael.delmonico@testamericainc.com		Page: Page 1 of 8
Company: ARCADIS U.S., Inc				Job #:

Address: 4665 Cornell Road Suite 200	Due Date Requested:
City: Cincinnati	TAT Requested (days):
State, Zip: OH, 45241	
Phone:	PO #: OH000294.2019.0004B
Email: kari.eldridge@arcadis-us.com	WO #: Project #: OH000294.2018.0004B
Project Name: Racer Moraine	Project #: 24006917
Site:	SSOW#:

Analysis Requested

Preservation Codes:

A - HCL	M - Hexane
B - NaOH	N - None
C - Zn Acetate	O - AsNaO2
D - Nitric Acid	P - Na2O4S
E - NaHSO4	Q - Na2SO3
F - MeOH	R - Na2S2O3
G - Amchlor	S - H2SO4
H - Ascorbic Acid	T - TSP Dodecahydrate
I - Ice	U - Acetone
J - DI Water	V - MCAA
K - EDTA	W - pH 4-5
L - EDA	Z - other (specify)

Other:

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	8260B - (MOD) Custom Sublist	9060 - TOC	9251 - Local Method	300.0_28D - Sulfate	6010B - (MOD) Custom Sublist	SM4500_S2_F - (MOD) Local Method	6010B - Fe-Mn - FF	Total Number of containers	Special Instructions/Note:
			Preservation Code:				A	S	N	N	D	CB	D		
GM-16/070819/	07/08/19	13:30	G	Water		3								3	
RMW-10L/070819/	07/08/19	15:10	G	Water		3								3	
GM-15/070819	07/08/19	16:50	G	Water		3								3	
IFR-17/070919/	07/09/19	08:45	G	Water		4								4	
IFR-16/070919/	07/09/19	11:55	G	Water		3								3	
				Water											
				Water											
				Water											
				Water											
				Water											
				Water											

210 Dayton

240-115562 Chain of Custody

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months

Deliverable Requested: I, II, III, IV, Other (specify)

Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Alex von Clausburg	07/09/19 12:30	Arcadis		7-9-19 14:00	ETA
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
	7-9-19 14:10	ETA		7-10-19 800	TA
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks:

Ver: 01/16/2019

09/05/2019

Client Sample ID: GM-16/070819/

Lab Sample ID: 240-115562-1

Date Collected: 07/08/19 13:30
Matrix: Water
Date Received: 07/10/19 08:00

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	1.0	U	1.0	0.13	ug/L			07/12/19 18:25	1
cis-1,2-Dichloroethene	**5.6**		1.0	0.16	ug/L			07/12/19 18:25	1
1,1-Dichloroethane	**0.54**	**J**	1.0	0.17	ug/L			07/12/19 18:25	1
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L			07/12/19 18:25	1
Ethylbenzene	1.0	U	1.0	0.11	ug/L			07/12/19 18:25	1
Tetrachloroethene	**13**		1.0	0.15	ug/L			07/12/19 18:25	1
Toluene	1.0	U	1.0	0.14	ug/L			07/12/19 18:25	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			07/12/19 18:25	1
1,1,1-Trichloroethane	1.0	U	1.0	0.24	ug/L			07/12/19 18:25	1
Trichloroethene	**3.0**		1.0	0.10	ug/L			07/12/19 18:25	1
Vinyl chloride	**0.45**	**J**	1.0	0.20	ug/L			07/12/19 18:25	1
Xylenes, Total	2.0	U	2.0	0.15	ug/L			07/12/19 18:25	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*90*		*59 - 120*		*07/12/19 18:25*	*1*
Dibromofluoromethane (Surr)	*99*		*75 - 128*		*07/12/19 18:25*	*1*
1,2-Dichloroethane-d4 (Surr)	*97*		*70 - 121*		*07/12/19 18:25*	*1*
Toluene-d8 (Surr)	*101*		*70 - 123*		*07/12/19 18:25*	*1*

Client Sample ID: RMW-102/070819/

Lab Sample ID: 240-115562-2

Date Collected: 07/08/19 15:10
Matrix: Water
Date Received: 07/10/19 08:00

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	1.0	U	1.0	0.13	ug/L			07/12/19 18:49	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.16	ug/L			07/12/19 18:49	1
1,1-Dichloroethane	1.0	U	1.0	0.17	ug/L			07/12/19 18:49	1
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L			07/12/19 18:49	1
Ethylbenzene	1.0	U	1.0	0.11	ug/L			07/12/19 18:49	1
Tetrachloroethene	**14**		1.0	0.15	ug/L			07/12/19 18:49	1
Toluene	1.0	U	1.0	0.14	ug/L			07/12/19 18:49	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			07/12/19 18:49	1
1,1,1-Trichloroethane	1.0	U	1.0	0.24	ug/L			07/12/19 18:49	1
Trichloroethene	**0.39**	**J**	1.0	0.10	ug/L			07/12/19 18:49	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			07/12/19 18:49	1
Xylenes, Total	2.0	U	2.0	0.15	ug/L			07/12/19 18:49	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*84*		*59 - 120*		*07/12/19 18:49*	*1*
Dibromofluoromethane (Surr)	*104*		*75 - 128*		*07/12/19 18:49*	*1*
1,2-Dichloroethane-d4 (Surr)	*98*		*70 - 121*		*07/12/19 18:49*	*1*
Toluene-d8 (Surr)	*100*		*70 - 123*		*07/12/19 18:49*	*1*

Client Sample ID: GM-15/070819/

Lab Sample ID: 240-115562-3

Date Collected: 07/08/19 16:50
Matrix: Water
Date Received: 07/10/19 08:00

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	1.0	U	1.0	0.13	ug/L			07/12/19 19:13	1

Client Sample ID: GM-15/070819/

Lab Sample ID: 240-115562-3

Date Collected: 07/08/19 16:50
Matrix: Water
Date Received: 07/10/19 08:00

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
cis-1,2-Dichloroethene	**9.4**		1.0	0.16	ug/L			07/12/19 19:13	1
1,1-Dichloroethane	**2.3**		1.0	0.17	ug/L			07/12/19 19:13	1
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L			07/12/19 19:13	1
Ethylbenzene	1.0	U	1.0	0.11	ug/L			07/12/19 19:13	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			07/12/19 19:13	1
Toluene	1.0	U	1.0	0.14	ug/L			07/12/19 19:13	1
trans-1,2-Dichloroethene	**0.68**	**J**	1.0	0.19	ug/L			07/12/19 19:13	1
1,1,1-Trichloroethane	1.0	U	1.0	0.24	ug/L			07/12/19 19:13	1
Trichloroethene	**5.7**		1.0	0.10	ug/L			07/12/19 19:13	1
Vinyl chloride	**0.68**	**J**	1.0	0.20	ug/L			07/12/19 19:13	1
Xylenes, Total	2.0	U	2.0	0.15	ug/L			07/12/19 19:13	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*85*		*59 - 120*		*07/12/19 19:13*	*1*
Dibromofluoromethane (Surr)	*101*		*75 - 128*		*07/12/19 19:13*	*1*
1,2-Dichloroethane-d4 (Surr)	*97*		*70 - 121*		*07/12/19 19:13*	*1*
Toluene-d8 (Surr)	*101*		*70 - 123*		*07/12/19 19:13*	*1*

Client Sample ID: HR-17/070919/

Lab Sample ID: 240-115562-4

Date Collected: 07/09/19 08:45
Matrix: Water
Date Received: 07/10/19 08:00

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	1.0	U	1.0	0.13	ug/L			07/12/19 23:11	1
cis-1,2-Dichloroethene	**1.2**		1.0	0.16	ug/L			07/12/19 23:11	1
1,1-Dichloroethane	**1.6**		1.0	0.17	ug/L			07/12/19 23:11	1
1,1-Dichloroethene	**0.54**	**J**	1.0	0.19	ug/L			07/12/19 23:11	1
Ethylbenzene	1.0	U	1.0	0.11	ug/L			07/12/19 23:11	1
Tetrachloroethene	**150**		10	1.5	ug/L			07/12/19 15:00	10
Toluene	1.0	U	1.0	0.14	ug/L			07/12/19 23:11	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			07/12/19 23:11	1
1,1,1-Trichloroethane	**7.4**		1.0	0.24	ug/L			07/12/19 23:11	1
Trichloroethene	**1.7**		1.0	0.10	ug/L			07/12/19 23:11	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			07/12/19 23:11	1
Xylenes, Total	2.0	U	2.0	0.15	ug/L			07/12/19 23:11	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*83*		*59 - 120*		*07/12/19 15:00*	*10*
4-Bromofluorobenzene (Surr)	*83*		*59 - 120*		*07/12/19 23:11*	*1*
Dibromofluoromethane (Surr)	*103*		*75 - 128*		*07/12/19 15:00*	*10*
Dibromofluoromethane (Surr)	*101*		*75 - 128*		*07/12/19 23:11*	*1*
1,2-Dichloroethane-d4 (Surr)	*103*		*70 - 121*		*07/12/19 15:00*	*10*
1,2-Dichloroethane-d4 (Surr)	*98*		*70 - 121*		*07/12/19 23:11*	*1*
Toluene-d8 (Surr)	*102*		*70 - 123*		*07/12/19 15:00*	*10*
Toluene-d8 (Surr)	*96*		*70 - 123*		*07/12/19 23:11*	*1*

Client Sample ID: HR-16/070919/

Lab Sample ID: 240-115562-5

Date Collected: 07/09/19 17:55
Matrix: Water
Date Received: 07/10/19 08:00

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	1.0	U	1.0	0.13	ug/L			07/12/19 19:37	1
cis-1,2-Dichloroethene	**0.62**	**J**	1.0	0.16	ug/L			07/12/19 19:37	1
1,1-Dichloroethane	**0.75**	**J**	1.0	0.17	ug/L			07/12/19 19:37	1
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L			07/12/19 19:37	1
Ethylbenzene	1.0	U	1.0	0.11	ug/L			07/12/19 19:37	1
Tetrachloroethene	**0.17**	**J**	1.0	0.15	ug/L			07/12/19 19:37	1
Toluene	1.0	U	1.0	0.14	ug/L			07/12/19 19:37	1
trans-1,2-Dichloroethene	**0.21**	**J**	1.0	0.19	ug/L			07/12/19 19:37	1
1,1,1-Trichloroethane	**0.36**	**J**	1.0	0.24	ug/L			07/12/19 19:37	1
Trichloroethene	**2.9**		1.0	0.10	ug/L			07/12/19 19:37	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			07/12/19 19:37	1
Xylenes, Total	2.0	U	2.0	0.15	ug/L			07/12/19 19:37	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*83*		*59 - 120*		*07/12/19 19:37*	*1*
Dibromofluoromethane (Surr)	*102*		*75 - 128*		*07/12/19 19:37*	*1*
1,2-Dichloroethane-d4 (Surr)	*101*		*70 - 121*		*07/12/19 19:37*	*1*
Toluene-d8 (Surr)	*103*		*70 - 123*		*07/12/19 19:37*	*1*

Client Sample ID: EB-02/070819/

Lab Sample ID: 240-115562-6

Date Collected: 07/08/19 00:00
Matrix: Water
Date Received: 07/10/19 08:00

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	1.0	U	1.0	0.13	ug/L			07/12/19 20:00	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.16	ug/L			07/12/19 20:00	1
1,1-Dichloroethane	1.0	U	1.0	0.17	ug/L			07/12/19 20:00	1
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L			07/12/19 20:00	1
Ethylbenzene	1.0	U	1.0	0.11	ug/L			07/12/19 20:00	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			07/12/19 20:00	1
Toluene	1.0	U	1.0	0.14	ug/L			07/12/19 20:00	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			07/12/19 20:00	1
1,1,1-Trichloroethane	1.0	U	1.0	0.24	ug/L			07/12/19 20:00	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			07/12/19 20:00	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			07/12/19 20:00	1
Xylenes, Total	2.0	U	2.0	0.15	ug/L			07/12/19 20:00	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*84*		*59 - 120*		*07/12/19 20:00*	*1*
Dibromofluoromethane (Surr)	*101*		*75 - 128*		*07/12/19 20:00*	*1*
1,2-Dichloroethane-d4 (Surr)	*100*		*70 - 121*		*07/12/19 20:00*	*1*
Toluene-d8 (Surr)	*102*		*70 - 123*		*07/12/19 20:00*	*1*

Eurofins TestAmerica, Canton
4101 Shuffel Street NW
North Canton, OH 44720
Phone: 330-497-9396 Fax: 330-497-0772

~~Columbus~~
~~209~~

Chain of Custody Record

1.8 | C1.9

eurofins Environment Testing TestAmerica

Client Information	Sampler: JCLARK	Lab PM: DelMonico, Michael	Carrier Tracking No(s):	COC No: 240-62293-26457.3
Client Contact: Kari Eldridge	Phone: 6149402210	E-Mail: michael.delmonico@testamericainc.com		Page: Page 3 of 8
Company: ARCADIS U.S., Inc				Job #:
Address: 4665 Cornell Road Suite 200	Due Date Requested:			
City: Cincinnati	TAT Requested (days):			
State, Zip: OH, 45241				
Phone:	PO #: OH000294.2019.0004B			
Email: kari.eldridge@arcadis-us.com	WO #: Project #: OH000294.2018.0004B			
Project Name: Racer Moraine	Project #: 24006917			
Site:	SSOW#:			

Analysis Requested

Preservation Codes:

A - HCL	M - Hexane
B - NaOH	N - None
C - Zn Acetate	O - AsNaO2
D - Nitric Acid	P - Na2O4S
E - NaHSO4	Q - Na2SO3
F - MeOH	R - Na2S2O3
G - Amchlor	S - H2SO4
H - Ascorbic Acid	T - TSP Dodecahydrate
I - Ice	U - Acetone
J - DI Water	V - MCAA
K - EDTA	W - pH 4-5
L - EDA	Z - other (specify)

Other:

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	8260B - (MOD) Custom Sublist	9060 - TOC	9251 - Local Method	300.0_28D - Sulfate	6010B - (MOD) Custom Sublist	SM4500_S2_F - (MOD) Local Method	6010B - Fe-Mn - FF	Total Number of containers	Special Instructions/Note:
			Preservation Code:				A	S	N	N	D	CB	D		
RMW-101/070819/		1405	G	Water			3							3	
RMW-100/070819/		1615	G	Water			3							3	
EB-1/070919/		0800	G	Water			3							3	
				Water											
				Water											
				Water											
				Water											
				Water											

240-115564 Chain of Custody

210
Dayton

Possible Hazard Identification	Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological	☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months
Deliverable Requested: I, II, III, IV, Other (specify)	Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Steven Clark	090919 1130	ARCADIS	Teresa Rennick	9-9-19 14:00	EA
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Teresa Rennick	9-9-19 14:10	PETA		9/10/19 800	TA
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks:

Ver: 01/16/2019

09/05/2019

Client Sample ID: RMW-101/070819/

Lab Sample ID: 240-115564-1

Date Collected: 07/08/19 14:05
Matrix: Water
Date Received: 07/10/19 08:00

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	**0.13**	**J**	1.0	0.13	ug/L			07/12/19 20:24	1
cis-1,2-Dichloroethene	**6.7**		1.0	0.16	ug/L			07/12/19 20:24	1
1,1-Dichloroethane	**1.3**		1.0	0.17	ug/L			07/12/19 20:24	1
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L			07/12/19 20:24	1
Ethylbenzene	1.0	U	1.0	0.11	ug/L			07/12/19 20:24	1
Tetrachloroethene	**0.49**	**J**	1.0	0.15	ug/L			07/12/19 20:24	1
Toluene	1.0	U	1.0	0.14	ug/L			07/12/19 20:24	1
trans-1,2-Dichloroethene	**0.30**	**J**	1.0	0.19	ug/L			07/12/19 20:24	1
1,1,1-Trichloroethane	1.0	U	1.0	0.24	ug/L			07/12/19 20:24	1
Trichloroethene	**1.9**		1.0	0.10	ug/L			07/12/19 20:24	1
Vinyl chloride	**0.61**	**J**	1.0	0.20	ug/L			07/12/19 20:24	1
Xylenes, Total	2.0	U	2.0	0.15	ug/L			07/12/19 20:24	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*83*		*59 - 120*		*07/12/19 20:24*	*1*
Dibromofluoromethane (Surr)	*101*		*75 - 128*		*07/12/19 20:24*	*1*
1,2-Dichloroethane-d4 (Surr)	*96*		*70 - 121*		*07/12/19 20:24*	*1*
Toluene-d8 (Surr)	*100*		*70 - 123*		*07/12/19 20:24*	*1*

Client Sample ID: RMW-100/070819/

Lab Sample ID: 240-115564-2

Date Collected: 07/08/19 16:15
Matrix: Water
Date Received: 07/10/19 08:00

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	1.0	U	1.0	0.13	ug/L			07/12/19 20:48	1
cis-1,2-Dichloroethene	**1.8**		1.0	0.16	ug/L			07/12/19 20:48	1
1,1-Dichloroethane	**0.82**	**J**	1.0	0.17	ug/L			07/12/19 20:48	1
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L			07/12/19 20:48	1
Ethylbenzene	1.0	U	1.0	0.11	ug/L			07/12/19 20:48	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			07/12/19 20:48	1
Toluene	1.0	U	1.0	0.14	ug/L			07/12/19 20:48	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			07/12/19 20:48	1
1,1,1-Trichloroethane	1.0	U	1.0	0.24	ug/L			07/12/19 20:48	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			07/12/19 20:48	1
Vinyl chloride	**0.50**	**J**	1.0	0.20	ug/L			07/12/19 20:48	1
Xylenes, Total	2.0	U	2.0	0.15	ug/L			07/12/19 20:48	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*82*		*59 - 120*		*07/12/19 20:48*	*1*
Dibromofluoromethane (Surr)	*103*		*75 - 128*		*07/12/19 20:48*	*1*
1,2-Dichloroethane-d4 (Surr)	*98*		*70 - 121*		*07/12/19 20:48*	*1*
Toluene-d8 (Surr)	*99*		*70 - 123*		*07/12/19 20:48*	*1*

Client Sample ID: EB-1/070919/

Lab Sample ID: 240-115564-3

Date Collected: 07/09/19 08:00
Matrix: Water
Date Received: 07/10/19 08:00

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	1.0	U	1.0	0.13	ug/L			07/12/19 21:12	1

Client Sample ID: EB-1/070919/

Date Collected: 07/09/19 08:00
Date Received: 07/10/19 08:00

Lab Sample ID: 240-115564-3

Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
cis-1,2-Dichloroethene	1.0	U	1.0	0.16	ug/L			07/12/19 21:12	1
1,1-Dichloroethane	1.0	U	1.0	0.17	ug/L			07/12/19 21:12	1
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L			07/12/19 21:12	1
Ethylbenzene	1.0	U	1.0	0.11	ug/L			07/12/19 21:12	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			07/12/19 21:12	1
Toluene	1.0	U	1.0	0.14	ug/L			07/12/19 21:12	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			07/12/19 21:12	1
1,1,1-Trichloroethane	1.0	U	1.0	0.24	ug/L			07/12/19 21:12	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			07/12/19 21:12	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			07/12/19 21:12	1
Xylenes, Total	2.0	U	2.0	0.15	ug/L			07/12/19 21:12	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*79*		*59 - 120*		*07/12/19 21:12*	*1*
Dibromofluoromethane (Surr)	*99*		*75 - 128*		*07/12/19 21:12*	*1*
1,2-Dichloroethane-d4 (Surr)	*98*		*70 - 121*		*07/12/19 21:12*	*1*
Toluene-d8 (Surr)	*100*		*70 - 123*		*07/12/19 21:12*	*1*

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4101 Shuffel Street NW
North Canton, OH 44720
Phone: 330-497-9396 Fax: 330-497-0772

~~Columbus~~ 1.2/C1.9
~~209~~

Chain of Custody Record

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Client Information	Sampler: Alex van Clarburg	Lab PM: DelMonico, Michael	Carrier Tracking No(s):	COC No: 240-62293-26457.2
Client Contact: Kari Eldridge	Phone: 614-634-0727	E-Mail: michael.delmonico@testamericainc.com		Page: Page 2 of 8
Company: ARCADIS U.S., Inc				Job #:
Address: 4665 Cornell Road Suite 200	Due Date Requested:			
City: Cincinnati	TAT Requested (days):			
State, Zip: OH, 45241				
Phone:	PO #: OH000294.2019.0004B			
Email: kari.eldridge@arcadis-us.com	WO #: Project #: OH000294.2018.0004B			
Project Name: Racer Moraine	Project #: 24006917			
Site:	SSOW#:			

Analysis Requested

Preservation Codes:
A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA, M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - pH 4-5

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	8260B - (MOD) Custom Sublist	9060 - TOC	9251 - Local Method	300.0_28D - Sulfate	6010B - (MOD) Custom Sublist	SM4600_S2_F - (MOD) Local Method	6010B - Fe-Mn - FF	Other	Total	Special Instructions/Note:
			Preservation Code:				A	S	N	N	D	CB	D			
W-4-S /070919/	07/09/19	13:40	G	Water			4								4	extra 10x dilution
W-3-S /070919/	07/09/19	15:20	G	Water			3								3	
W-2-S /070919/	07/09/19	16:30	G	Water			3								3	
GM-50 /071019/	07/10/19	08:30	G	Water			3								3	
GM-47 /071019/	07/10/19	09:35	G	Water			3								3	
GM-51 /071019/	07/10/19	11:55	G	Water			3								3	
GM-49 /071019/	07/10/19	14:50	G	Water			3								3	
GM-52 /071019/	07/10/19	16:00	G	Water			3								3	
GM-48 /071019/	07/10/19	12:55	G	Water			3								3	
EB-2 /071019/	07/10/19	17:00	G	Water			3								3	
				Water			3									

240-115711 Chain of Custody

210 Dayton

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months

Deliverable Requested: I, II, III, IV, Other (specify)

Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

Relinquished by	Date/Time	Company	Received by	Date/Time	Company
Alex van Clarburg	07/11/19 0830	Arcadis		7-11-19 1400	ETA
	7-11-19 1430	ETA		7/12/19 820	

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks:

Ver: 01/16/2019

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09/05/2019

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North Canton, OH 44720
Phone: 330-497-9396 Fax: 330-497-0772

~~Columbus~~
~~209~~

Chain of Custody Record

eurofins | Environment Testing TestAmerica

Client Information	Sampler: S CLARK	Lab PM: DelMonico, Michael	Carrier Tracking No(s):	COC No: 240-62293-26457.4
Client Contact: Kari Eldridge	Phone: 6149402210	E-Mail: michael.delmonico@testamericainc.com		Page: Page 4 of 8
Company: ARCADIS U.S., Inc				Job #:
Address: 4665 Cornell Road Suite 200	Due Date Requested:			
City: Cincinnati	TAT Requested (days):			
State, Zip: OH, 45241				
Phone:	PO #: OH000294.2019.0004B			
Email: kari.eldridge@arcadis-us.com	WO #: Project #: OH000294.2018.0004B			
Project Name: Racer Moraine	Project #: 24006917			
Site:	SSOW#:			

Analysis Requested

Preservation Codes:

A - HCL	M - Hexane
B - NaOH	N - None
C - Zn Acetate	O - AsNaO2
D - Nitric Acid	P - Na2O4S
E - NaHSO4	Q - Na2SO3
F - MeOH	R - Na2S2O3
G - Amchlor	S - H2SO4
H - Ascorbic Acid	T - TSP Dodecahydrate
I - Ice	U - Acetone
J - DI Water	V - MCAA
K - EDTA	W - pH 4-5
L - EDA	Z - other (specify)

Other:

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	8260B - (MOD) Custom Sublist	9060 - TOC	9251 - Local Method	300.0_28D - Sulfate	6010B - (MOD) Custom Sublist	SM4500_S2_F - (MOD) Local Method	6010B - Fe-Mn - FF	Total Number of containers	Special Instructions/Note:
			Preservation Code:				A	S	N	N	D	CB	D		
HR·4/070919/	070919	1335	G	Water			3							3	
W·2·N/070919/	070919	1550	G	Water			3							3	
W·3·N/070919/	070919	2035	G	Water			3							3	
W·4·N/070919/	070919	1815	G	Water			3							3	
HR·4/070919/MS/MSD	070919	1335	G	Water			6							6	
EB·1/071019/	071019	0730	G	Water			3							3	
GM·63/071019/	071019	1150	G	Water			3							3	
GM·64/071019/	071019	0925	G	Water			3							3	
RMW·98/071019/	071019	1840	G	Water			3							3	
RMW·99/071019/	071019	1705	G	Water			3							3	
WSW·23/071019/	071019	1420	G	Water			4							4	+1 VOA FOR 10X DILUTION

210 Dayton

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months

Deliverable Requested: I, II, III, IV, Other (specify)

Special Instructions/QC Requirements:

Empty Kit Relinquished by: | Date: | Time: | Method of Shipment:

	Date/Time	Company	Received by	Date/Time	Company
Relinquished by: Steve Clark	071119 0830	ARCADIS	Received by: Teresa Davis	7-11-19	ETA
Relinquished by:	7-11-19 14:30	ETA	Received by:	7/12/19 8:00	TA
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No | Custody Seal No.: | Cooler Temperature(s) °C and Other Remarks:

Ver: 01/16/2019

Eurofins TestAmerica, Canton
4101 Shuffel Street NW
North Canton, OH 44720
Phone: 330-497-9396 Fax: 330-497-0772

~~Columbus~~ ~~209~~

Chain of Custody Record

eurofins Environment Testing TestAmerica

Client Information	Sampler: S CLARK	Lab PM: DelMonico, Michael	Carrier Tracking No(s):	COC No: 240-62293-26457.5
Client Contact: Kari Eldridge	Phone: 6149402210	E-Mail: michael.delmonico@testamericainc.com		Page: Page 5 of 8
Company: ARCADIS U.S., Inc				Job #:
Address: 4665 Cornell Road Suite 200	Due Date Requested:			
City: Cincinnati	TAT Requested (days):			
State, Zip: OH, 45241				
Phone:	PO #: OH000294.2019.0004B			
Email: kari.eldridge@arcadis-us.com	WO #: Project #: OH000294.2018.0004B			
Project Name: Racer Moraine	Project #: 24006917			
Site:	SSOW#:			

Analysis Requested

Preservation Codes:

A - HCL	M - Hexane
B - NaOH	N - None
C - Zn Acetate	O - AsNaO2
D - Nitric Acid	P - Na2O4S
E - NaHSO4	Q - Na2SO3
F - MeOH	R - Na2S2O3
G - Amchlor	S - H2SO4
H - Ascorbic Acid	T - TSP Dodecahydrate
I - Ice	U - Acetone
J - DI Water	V - MCAA
K - EDTA	W - pH 4-5
L - EDA	Z - other (specify)

Other:

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	8260B - (MOD) Custom Sublist	9060 - TOC	9251 - Local Method	300.0_28D - Sulfate	6010B - (MOD) Custom Sublist	SM4500_S2_F - (MOD) Local Method	6010B - Fe-Mn - FF	Total Number of containers	Special Instructions/Note:
			Preservation Code:				A	S	N	N	D	CB	D		
DUP-1/070919/	0709A			Water			3							3	
TRIP BLANK	071119	0820		Water			3							3	
EB-1/071119/	071119	0820		Water			3							3	
				Water											
				Water											
				Water											
				Water											
				Water											
				Water											
				Water											
				Water											

210 Dayton

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months

Deliverable Requested: I, II, III, IV, Other (specify)

Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

	Relinquished by	Date/Time	Company	Received by	Date/Time	Company
1	Steve Clark	071119 0830	ARCADIS	Tweet Daniels	7-11-19 14:00	ETA
2	Tweet Daniels	7-11-19 14:30	ETA		7/12/19 800	
3	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No | Custody Seal No.:

Cooler Temperature(s) °C and Other Remarks:

Ver: 01/16/2019

09/05/2019

Client Sample ID: W-4-S/070919/

Date Collected: 07/09/19 13:40
Date Received: 07/12/19 08:00

Lab Sample ID: 240-115711-1

Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	1.0	U	1.0	0.13	ug/L			07/16/19 18:51	1
cis-1,2-Dichloroethene	**13**		1.0	0.16	ug/L			07/16/19 18:51	1
1,1-Dichloroethane	**1.6**		1.0	0.17	ug/L			07/16/19 18:51	1
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L			07/16/19 18:51	1
Ethylbenzene	1.0	U	1.0	0.11	ug/L			07/16/19 18:51	1
Tetrachloroethene	**70**		3.3	0.50	ug/L			07/19/19 12:27	3.33
Toluene	1.0	U	1.0	0.14	ug/L			07/16/19 18:51	1
trans-1,2-Dichloroethene	**1.2**		1.0	0.19	ug/L			07/16/19 18:51	1
1,1,1-Trichloroethane	**1.7**		1.0	0.24	ug/L			07/16/19 18:51	1
Trichloroethene	**33**		1.0	0.10	ug/L			07/16/19 18:51	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			07/16/19 18:51	1
Xylenes, Total	2.0	U	2.0	0.15	ug/L			07/16/19 18:51	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*88*		*59 - 120*		*07/16/19 18:51*	*1*
4-Bromofluorobenzene (Surr)	*91*		*59 - 120*		*07/19/19 12:27*	*3.33*
Dibromofluoromethane (Surr)	*106*		*75 - 128*		*07/16/19 18:51*	*1*
Dibromofluoromethane (Surr)	*108*		*75 - 128*		*07/19/19 12:27*	*3.33*
1,2-Dichloroethane-d4 (Surr)	*95*		*70 - 121*		*07/16/19 18:51*	*1*
1,2-Dichloroethane-d4 (Surr)	*100*		*70 - 121*		*07/19/19 12:27*	*3.33*
Toluene-d8 (Surr)	*97*		*70 - 123*		*07/16/19 18:51*	*1*
Toluene-d8 (Surr)	*100*		*70 - 123*		*07/19/19 12:27*	*3.33*

Client Sample ID: W-3-S/070919/

Date Collected: 07/09/19 15:20
Date Received: 07/12/19 08:00

Lab Sample ID: 240-115711-2

Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	1.0	U	1.0	0.13	ug/L			07/17/19 17:28	1
cis-1,2-Dichloroethene	**1.1**		1.0	0.16	ug/L			07/17/19 17:28	1
1,1-Dichloroethane	**0.83**	**J**	1.0	0.17	ug/L			07/17/19 17:28	1
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L			07/17/19 17:28	1
Ethylbenzene	1.0	U	1.0	0.11	ug/L			07/17/19 17:28	1
Tetrachloroethene	**81**		5.0	0.75	ug/L			07/18/19 15:30	5
Toluene	1.0	U	1.0	0.14	ug/L			07/17/19 17:28	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			07/17/19 17:28	1
1,1,1-Trichloroethane	**2.5**		1.0	0.24	ug/L			07/17/19 17:28	1
Trichloroethene	**5.6**		1.0	0.10	ug/L			07/17/19 17:28	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			07/17/19 17:28	1
Xylenes, Total	2.0	U	2.0	0.15	ug/L			07/17/19 17:28	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*86*		*59 - 120*		*07/17/19 17:28*	*1*
4-Bromofluorobenzene (Surr)	*79*		*59 - 120*		*07/18/19 15:30*	*5*
Dibromofluoromethane (Surr)	*103*		*75 - 128*		*07/17/19 17:28*	*1*
Dibromofluoromethane (Surr)	*107*		*75 - 128*		*07/18/19 15:30*	*5*
1,2-Dichloroethane-d4 (Surr)	*96*		*70 - 121*		*07/17/19 17:28*	*1*
1,2-Dichloroethane-d4 (Surr)	*97*		*70 - 121*		*07/18/19 15:30*	*5*
Toluene-d8 (Surr)	*94*		*70 - 123*		*07/17/19 17:28*	*1*

Client Sample ID: W-3-S/070919/

Lab Sample ID: 240-115711-2

Date Collected: 07/09/19 15:20

Matrix: Water

Date Received: 07/12/19 08:00

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*97*		*70 - 123*		*07/18/19 15:30*	*5*

Client Sample ID: W-2-S/070919/

Lab Sample ID: 240-115711-3

Date Collected: 07/09/19 16:30

Matrix: Water

Date Received: 07/12/19 08:00

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	1.0	U	1.0	0.13	ug/L			07/17/19 17:52	1
cis-1,2-Dichloroethene	**0.29**	**J**	1.0	0.16	ug/L			07/17/19 17:52	1
1,1-Dichloroethane	**0.23**	**J**	1.0	0.17	ug/L			07/17/19 17:52	1
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L			07/17/19 17:52	1
Ethylbenzene	1.0	U	1.0	0.11	ug/L			07/17/19 17:52	1
Tetrachloroethene	**20**		1.0	0.15	ug/L			07/17/19 17:52	1
Toluene	1.0	U	1.0	0.14	ug/L			07/17/19 17:52	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			07/17/19 17:52	1
1,1,1-Trichloroethane	**0.60**	**J**	1.0	0.24	ug/L			07/17/19 17:52	1
Trichloroethene	**2.8**		1.0	0.10	ug/L			07/17/19 17:52	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			07/17/19 17:52	1
Xylenes, Total	2.0	U	2.0	0.15	ug/L			07/17/19 17:52	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*81*		*59 - 120*		*07/17/19 17:52*	*1*
Dibromofluoromethane (Surr)	*104*		*75 - 128*		*07/17/19 17:52*	*1*
1,2-Dichloroethane-d4 (Surr)	*98*		*70 - 121*		*07/17/19 17:52*	*1*
Toluene-d8 (Surr)	*97*		*70 - 123*		*07/17/19 17:52*	*1*

Client Sample ID: GM-50/071019/

Lab Sample ID: 240-115711-4

Date Collected: 07/10/19 08:30

Matrix: Water

Date Received: 07/12/19 08:00

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	1.0	U	1.0	0.13	ug/L			07/18/19 15:53	1
cis-1,2-Dichloroethene	**7.4**		1.0	0.16	ug/L			07/18/19 15:53	1
1,1-Dichloroethane	**7.4**		1.0	0.17	ug/L			07/18/19 15:53	1
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L			07/18/19 15:53	1
Ethylbenzene	1.0	U	1.0	0.11	ug/L			07/18/19 15:53	1
Tetrachloroethene	**2.2**		1.0	0.15	ug/L			07/18/19 15:53	1
Toluene	1.0	U	1.0	0.14	ug/L			07/18/19 15:53	1
trans-1,2-Dichloroethene	**0.20**	**J**	1.0	0.19	ug/L			07/18/19 15:53	1
1,1,1-Trichloroethane	1.0	U	1.0	0.24	ug/L			07/18/19 15:53	1
Trichloroethene	**0.39**	**J**	1.0	0.10	ug/L			07/18/19 15:53	1
Vinyl chloride	**1.8**		1.0	0.20	ug/L			07/18/19 15:53	1
Xylenes, Total	2.0	U	2.0	0.15	ug/L			07/18/19 15:53	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*81*		*59 - 120*		*07/18/19 15:53*	*1*
Dibromofluoromethane (Surr)	*106*		*75 - 128*		*07/18/19 15:53*	*1*
1,2-Dichloroethane-d4 (Surr)	*97*		*70 - 121*		*07/18/19 15:53*	*1*

Client Sample ID: GM-50/071019/

Date Collected: 07/10/19 08:30
Date Received: 07/12/19 08:00

Lab Sample ID: 240-115711-4

Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	*100*		*70 - 123*		*07/18/19 15:53*	*1*

Client Sample ID: GM-47/071019/

Date Collected: 07/10/19 09:35
Date Received: 07/12/19 08:00

Lab Sample ID: 240-115711-5

Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	1.0	U	1.0	0.13	ug/L			07/18/19 16:17	1
cis-1,2-Dichloroethene	**29**		1.0	0.16	ug/L			07/18/19 16:17	1
1,1-Dichloroethane	**5.2**		1.0	0.17	ug/L			07/18/19 16:17	1
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L			07/18/19 16:17	1
Ethylbenzene	1.0	U	1.0	0.11	ug/L			07/18/19 16:17	1
Tetrachloroethene	**40**		1.0	0.15	ug/L			07/18/19 16:17	1
Toluene	1.0	U	1.0	0.14	ug/L			07/18/19 16:17	1
trans-1,2-Dichloroethene	**0.81**	**J**	1.0	0.19	ug/L			07/18/19 16:17	1
1,1,1-Trichloroethane	1.0	U	1.0	0.24	ug/L			07/18/19 16:17	1
Trichloroethene	**9.3**		1.0	0.10	ug/L			07/18/19 16:17	1
Vinyl chloride	**0.60**	**J**	1.0	0.20	ug/L			07/18/19 16:17	1
Xylenes, Total	2.0	U	2.0	0.15	ug/L			07/18/19 16:17	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	*77*		*59 - 120*		*07/18/19 16:17*	*1*
Dibromofluoromethane (Surr)	*104*		*75 - 128*		*07/18/19 16:17*	*1*
1,2-Dichloroethane-d4 (Surr)	*96*		*70 - 121*		*07/18/19 16:17*	*1*
Toluene-d8 (Surr)	*96*		*70 - 123*		*07/18/19 16:17*	*1*

Client Sample ID: GM-51/071019/

Date Collected: 07/10/19 11:55
Date Received: 07/12/19 08:00

Lab Sample ID: 240-115711-6

Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	1.0	U	1.0	0.13	ug/L			07/18/19 16:41	1
cis-1,2-Dichloroethene	**6.1**		1.0	0.16	ug/L			07/18/19 16:41	1
1,1-Dichloroethane	**1.9**		1.0	0.17	ug/L			07/18/19 16:41	1
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L			07/18/19 16:41	1
Ethylbenzene	1.0	U	1.0	0.11	ug/L			07/18/19 16:41	1
Tetrachloroethene	**44**		2.0	0.30	ug/L			07/23/19 15:48	2
Toluene	1.0	U	1.0	0.14	ug/L			07/18/19 16:41	1
trans-1,2-Dichloroethene	**0.22**	**J**	1.0	0.19	ug/L			07/18/19 16:41	1
1,1,1-Trichloroethane	1.0	U	1.0	0.24	ug/L			07/18/19 16:41	1
Trichloroethene	**5.0**		1.0	0.10	ug/L			07/18/19 16:41	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			07/18/19 16:41	1
Xylenes, Total	2.0	U	2.0	0.15	ug/L			07/18/19 16:41	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	*75*		*59 - 120*		*07/18/19 16:41*	*1*
4-Bromofluorobenzene (Surr)	*80*		*59 - 120*		*07/23/19 15:48*	*2*
Dibromofluoromethane (Surr)	*107*		*75 - 128*		*07/18/19 16:41*	*1*

Client Sample ID: GM-51/071019/

Lab Sample ID: 240-115711-6

Date Collected: 07/10/19 11:55
Matrix: Water
Date Received: 07/12/19 08:00

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Dibromofluoromethane (Surr)	*107*		*75 - 128*		*07/23/19 15:48*	*2*
1,2-Dichloroethane-d4 (Surr)	*97*		*70 - 121*		*07/18/19 16:41*	*1*
1,2-Dichloroethane-d4 (Surr)	*101*		*70 - 121*		*07/23/19 15:48*	*2*
Toluene-d8 (Surr)	*96*		*70 - 123*		*07/18/19 16:41*	*1*
Toluene-d8 (Surr)	*96*		*70 - 123*		*07/23/19 15:48*	*2*

Client Sample ID: GM-49/071019/

Lab Sample ID: 240-115711-7

Date Collected: 07/10/19 14:50
Matrix: Water
Date Received: 07/12/19 08:00

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	1.0	U	1.0	0.13	ug/L			07/18/19 17:05	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.16	ug/L			07/18/19 17:05	1
1,1-Dichloroethane	**0.21**	**J**	1.0	0.17	ug/L			07/18/19 17:05	1
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L			07/18/19 17:05	1
Ethylbenzene	1.0	U	1.0	0.11	ug/L			07/18/19 17:05	1
Tetrachloroethene	**1.2**		1.0	0.15	ug/L			07/18/19 17:05	1
Toluene	1.0	U	1.0	0.14	ug/L			07/18/19 17:05	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			07/18/19 17:05	1
1,1,1-Trichloroethane	1.0	U	1.0	0.24	ug/L			07/18/19 17:05	1
Trichloroethene	**2.4**		1.0	0.10	ug/L			07/18/19 17:05	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			07/18/19 17:05	1
Xylenes, Total	2.0	U	2.0	0.15	ug/L			07/18/19 17:05	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*80*		*59 - 120*		*07/18/19 17:05*	*1*
Dibromofluoromethane (Surr)	*111*		*75 - 128*		*07/18/19 17:05*	*1*
1,2-Dichloroethane-d4 (Surr)	*100*		*70 - 121*		*07/18/19 17:05*	*1*
Toluene-d8 (Surr)	*99*		*70 - 123*		*07/18/19 17:05*	*1*

Client Sample ID: GM-52/071019/

Lab Sample ID: 240-115711-8

Date Collected: 07/10/19 16:00
Matrix: Water
Date Received: 07/12/19 08:00

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	1.0	U	1.0	0.13	ug/L			07/18/19 17:29	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.16	ug/L			07/18/19 17:29	1
1,1-Dichloroethane	1.0	U	1.0	0.17	ug/L			07/18/19 17:29	1
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L			07/18/19 17:29	1
Ethylbenzene	1.0	U	1.0	0.11	ug/L			07/18/19 17:29	1
Tetrachloroethene	**15**		1.0	0.15	ug/L			07/18/19 17:29	1
Toluene	1.0	U	1.0	0.14	ug/L			07/18/19 17:29	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			07/18/19 17:29	1
1,1,1-Trichloroethane	1.0	U	1.0	0.24	ug/L			07/18/19 17:29	1
Trichloroethene	**0.83**	**J**	1.0	0.10	ug/L			07/18/19 17:29	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			07/18/19 17:29	1
Xylenes, Total	2.0	U	2.0	0.15	ug/L			07/18/19 17:29	1

Client Sample ID: GM-52/071019/

Date Collected: 07/10/19 16:00
Date Received: 07/12/19 08:00

Lab Sample ID: 240-115711-8

Matrix: Water

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*78*		*59 - 120*		*07/18/19 17:29*	*1*
Dibromofluoromethane (Surr)	*110*		*75 - 128*		*07/18/19 17:29*	*1*
1,2-Dichloroethane-d4 (Surr)	*99*		*70 - 121*		*07/18/19 17:29*	*1*
Toluene-d8 (Surr)	*96*		*70 - 123*		*07/18/19 17:29*	*1*

Client Sample ID: GM-48/071019/

Date Collected: 07/10/19 12:55
Date Received: 07/12/19 08:00

Lab Sample ID: 240-115711-9

Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	1.0	U	1.0	0.13	ug/L			07/18/19 17:53	1
cis-1,2-Dichloroethene	**0.89**	**J**	1.0	0.16	ug/L			07/18/19 17:53	1
1,1-Dichloroethane	**0.19**	**J**	1.0	0.17	ug/L			07/18/19 17:53	1
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L			07/18/19 17:53	1
Ethylbenzene	1.0	U	1.0	0.11	ug/L			07/18/19 17:53	1
Tetrachloroethene	**28**		1.0	0.15	ug/L			07/18/19 17:53	1
Toluene	1.0	U	1.0	0.14	ug/L			07/18/19 17:53	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			07/18/19 17:53	1
1,1,1-Trichloroethane	1.0	U	1.0	0.24	ug/L			07/18/19 17:53	1
Trichloroethene	**1.3**		1.0	0.10	ug/L			07/18/19 17:53	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			07/18/19 17:53	1
Xylenes, Total	2.0	U	2.0	0.15	ug/L			07/18/19 17:53	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*78*		*59 - 120*		*07/18/19 17:53*	*1*
Dibromofluoromethane (Surr)	*110*		*75 - 128*		*07/18/19 17:53*	*1*
1,2-Dichloroethane-d4 (Surr)	*101*		*70 - 121*		*07/18/19 17:53*	*1*
Toluene-d8 (Surr)	*96*		*70 - 123*		*07/18/19 17:53*	*1*

Client Sample ID: EB-2/071019/

Date Collected: 07/10/19 17:00
Date Received: 07/12/19 08:00

Lab Sample ID: 240-115711-10

Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	1.0	U	1.0	0.13	ug/L			07/17/19 18:16	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.16	ug/L			07/17/19 18:16	1
1,1-Dichloroethane	1.0	U	1.0	0.17	ug/L			07/17/19 18:16	1
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L			07/17/19 18:16	1
Ethylbenzene	1.0	U	1.0	0.11	ug/L			07/17/19 18:16	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			07/17/19 18:16	1
Toluene	1.0	U	1.0	0.14	ug/L			07/17/19 18:16	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			07/17/19 18:16	1
1,1,1-Trichloroethane	1.0	U	1.0	0.24	ug/L			07/17/19 18:16	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			07/17/19 18:16	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			07/17/19 18:16	1
Xylenes, Total	2.0	U	2.0	0.15	ug/L			07/17/19 18:16	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*79*		*59 - 120*		*07/17/19 18:16*	*1*

Client Sample ID: EB-2/071019/

Date Collected: 07/10/19 17:00
Date Received: 07/12/19 08:00

Lab Sample ID: 240-115711-10

Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Dibromofluoromethane (Surr)	*107*		*75 - 128*		*07/17/19 18:16*	*1*
1,2-Dichloroethane-d4 (Surr)	*95*		*70 - 121*		*07/17/19 18:16*	*1*
Toluene-d8 (Surr)	*98*		*70 - 123*		*07/17/19 18:16*	*1*

Client Sample ID: HR-4/070919/

Date Collected: 07/09/19 13:35
Date Received: 07/12/19 08:00

Lab Sample ID: 240-115711-11

Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	1.0	U	1.0	0.13	ug/L			07/17/19 18:40	1
cis-1,2-Dichloroethene	**0.56**	**J**	1.0	0.16	ug/L			07/17/19 18:40	1
1,1-Dichloroethane	**1.7**		1.0	0.17	ug/L			07/17/19 18:40	1
1,1-Dichloroethene	**0.19**	**J**	1.0	0.19	ug/L			07/17/19 18:40	1
Ethylbenzene	1.0	U	1.0	0.11	ug/L			07/17/19 18:40	1
Tetrachloroethene	**0.22**	**J**	1.0	0.15	ug/L			07/17/19 18:40	1
Toluene	1.0	U	1.0	0.14	ug/L			07/17/19 18:40	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			07/17/19 18:40	1
1,1,1-Trichloroethane	**2.2**		1.0	0.24	ug/L			07/17/19 18:40	1
Trichloroethene	**0.29**	**J**	1.0	0.10	ug/L			07/17/19 18:40	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			07/17/19 18:40	1
Xylenes, Total	2.0	U	2.0	0.15	ug/L			07/17/19 18:40	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	*80*		*59 - 120*		*07/17/19 18:40*	*1*
Dibromofluoromethane (Surr)	*107*		*75 - 128*		*07/17/19 18:40*	*1*
1,2-Dichloroethane-d4 (Surr)	*97*		*70 - 121*		*07/17/19 18:40*	*1*
Toluene-d8 (Surr)	*102*		*70 - 123*		*07/17/19 18:40*	*1*

Client Sample ID: W-2-N/070919/

Date Collected: 07/09/19 15:50
Date Received: 07/12/19 08:00

Lab Sample ID: 240-115711-12

Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	1.0	U	1.0	0.13	ug/L			07/17/19 19:51	1
cis-1,2-Dichloroethene	**1.8**		1.0	0.16	ug/L			07/17/19 19:51	1
1,1-Dichloroethane	**0.19**	**J**	1.0	0.17	ug/L			07/17/19 19:51	1
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L			07/17/19 19:51	1
Ethylbenzene	1.0	U	1.0	0.11	ug/L			07/17/19 19:51	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			07/17/19 19:51	1
Toluene	1.0	U	1.0	0.14	ug/L			07/17/19 19:51	1
trans-1,2-Dichloroethene	**0.22**	**J**	1.0	0.19	ug/L			07/17/19 19:51	1
1,1,1-Trichloroethane	1.0	U	1.0	0.24	ug/L			07/17/19 19:51	1
Trichloroethene	**1.1**		1.0	0.10	ug/L			07/17/19 19:51	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			07/17/19 19:51	1
Xylenes, Total	2.0	U	2.0	0.15	ug/L			07/17/19 19:51	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	*82*		*59 - 120*		*07/17/19 19:51*	*1*

Client Sample ID: W-2-N/070919/

Date Collected: 07/09/19 15:50
Date Received: 07/12/19 08:00

Lab Sample ID: 240-115711-12
Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Dibromofluoromethane (Surr)	*100*		*75 - 128*		*07/17/19 19:51*	*1*
1,2-Dichloroethane-d4 (Surr)	*94*		*70 - 121*		*07/17/19 19:51*	*1*
Toluene-d8 (Surr)	*104*		*70 - 123*		*07/17/19 19:51*	*1*

Client Sample ID: W-3-N/070919/

Date Collected: 07/09/19 20:35
Date Received: 07/12/19 08:00

Lab Sample ID: 240-115711-13
Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	1.0	U	1.0	0.13	ug/L			07/17/19 20:15	1
cis-1,2-Dichloroethene	**14**		1.0	0.16	ug/L			07/17/19 20:15	1
1,1-Dichloroethane	1.0	U	1.0	0.17	ug/L			07/17/19 20:15	1
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L			07/17/19 20:15	1
Ethylbenzene	1.0	U	1.0	0.11	ug/L			07/17/19 20:15	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			07/17/19 20:15	1
Toluene	1.0	U	1.0	0.14	ug/L			07/17/19 20:15	1
trans-1,2-Dichloroethene	**0.23**	**J**	1.0	0.19	ug/L			07/17/19 20:15	1
1,1,1-Trichloroethane	1.0	U	1.0	0.24	ug/L			07/17/19 20:15	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			07/17/19 20:15	1
Vinyl chloride	**0.81**	**J**	1.0	0.20	ug/L			07/17/19 20:15	1
Xylenes, Total	2.0	U	2.0	0.15	ug/L			07/17/19 20:15	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*81*		*59 - 120*		*07/17/19 20:15*	*1*
Dibromofluoromethane (Surr)	*102*		*75 - 128*		*07/17/19 20:15*	*1*
1,2-Dichloroethane-d4 (Surr)	*95*		*70 - 121*		*07/17/19 20:15*	*1*
Toluene-d8 (Surr)	*102*		*70 - 123*		*07/17/19 20:15*	*1*

Client Sample ID: W-4-N/070919/

Date Collected: 07/09/19 18:15
Date Received: 07/12/19 08:00

Lab Sample ID: 240-115711-14
Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	1.0	U	1.0	0.13	ug/L			07/17/19 20:39	1
cis-1,2-Dichloroethene	**6.6**		1.0	0.16	ug/L			07/17/19 20:39	1
1,1-Dichloroethane	**7.6**		1.0	0.17	ug/L			07/17/19 20:39	1
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L			07/17/19 20:39	1
Ethylbenzene	1.0	U	1.0	0.11	ug/L			07/17/19 20:39	1
Tetrachloroethene	**0.72**	**J**	1.0	0.15	ug/L			07/17/19 20:39	1
Toluene	1.0	U	1.0	0.14	ug/L			07/17/19 20:39	1
trans-1,2-Dichloroethene	**0.88**	**J**	1.0	0.19	ug/L			07/17/19 20:39	1
1,1,1-Trichloroethane	1.0	U	1.0	0.24	ug/L			07/17/19 20:39	1
Trichloroethene	**9.2**		1.0	0.10	ug/L			07/17/19 20:39	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			07/17/19 20:39	1
Xylenes, Total	2.0	U	2.0	0.15	ug/L			07/17/19 20:39	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*80*		*59 - 120*		*07/17/19 20:39*	*1*

Client Sample ID: W-4-N/070919/

Date Collected: 07/09/19 18:15
Date Received: 07/12/19 08:00

Lab Sample ID: 240-115711-14
Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Dibromofluoromethane (Surr)	*103*		*75 - 128*		*07/17/19 20:39*	*1*
1,2-Dichloroethane-d4 (Surr)	*99*		*70 - 121*		*07/17/19 20:39*	*1*
Toluene-d8 (Surr)	*101*		*70 - 123*		*07/17/19 20:39*	*1*

Client Sample ID: EB-1/071019/

Date Collected: 07/10/19 07:30
Date Received: 07/12/19 08:00

Lab Sample ID: 240-115711-15
Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	1.0	U	1.0	0.13	ug/L			07/17/19 21:03	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.16	ug/L			07/17/19 21:03	1
1,1-Dichloroethane	1.0	U	1.0	0.17	ug/L			07/17/19 21:03	1
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L			07/17/19 21:03	1
Ethylbenzene	1.0	U	1.0	0.11	ug/L			07/17/19 21:03	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			07/17/19 21:03	1
Toluene	1.0	U	1.0	0.14	ug/L			07/17/19 21:03	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			07/17/19 21:03	1
1,1,1-Trichloroethane	1.0	U	1.0	0.24	ug/L			07/17/19 21:03	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			07/17/19 21:03	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			07/17/19 21:03	1
Xylenes, Total	2.0	U	2.0	0.15	ug/L			07/17/19 21:03	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*79*		*59 - 120*		*07/17/19 21:03*	*1*
Dibromofluoromethane (Surr)	*105*		*75 - 128*		*07/17/19 21:03*	*1*
1,2-Dichloroethane-d4 (Surr)	*98*		*70 - 121*		*07/17/19 21:03*	*1*
Toluene-d8 (Surr)	*100*		*70 - 123*		*07/17/19 21:03*	*1*

Client Sample ID: GM-63/071019/

Date Collected: 07/10/19 11:50
Date Received: 07/12/19 08:00

Lab Sample ID: 240-115711-16
Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	1.0	U	1.0	0.13	ug/L			07/18/19 18:17	1
cis-1,2-Dichloroethene	**2.6**		1.0	0.16	ug/L			07/18/19 18:17	1
1,1-Dichloroethane	**1.6**		1.0	0.17	ug/L			07/18/19 18:17	1
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L			07/18/19 18:17	1
Ethylbenzene	1.0	U	1.0	0.11	ug/L			07/18/19 18:17	1
Tetrachloroethene	**12**		1.0	0.15	ug/L			07/18/19 18:17	1
Toluene	1.0	U	1.0	0.14	ug/L			07/18/19 18:17	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			07/18/19 18:17	1
1,1,1-Trichloroethane	1.0	U	1.0	0.24	ug/L			07/18/19 18:17	1
Trichloroethene	**3.7**		1.0	0.10	ug/L			07/18/19 18:17	1
Vinyl chloride	**0.31**	**J**	1.0	0.20	ug/L			07/18/19 18:17	1
Xylenes, Total	2.0	U	2.0	0.15	ug/L			07/18/19 18:17	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*79*		*59 - 120*		*07/18/19 18:17*	*1*

Client Sample ID: GM-63/071019/

Lab Sample ID: 240-115711-16

Date Collected: 07/10/19 11:50
Matrix: Water
Date Received: 07/12/19 08:00

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Dibromofluoromethane (Surr)	*108*		*75 - 128*		*07/18/19 18:17*	*1*
1,2-Dichloroethane-d4 (Surr)	*99*		*70 - 121*		*07/18/19 18:17*	*1*
Toluene-d8 (Surr)	*98*		*70 - 123*		*07/18/19 18:17*	*1*

Client Sample ID: GM-64/071019/

Lab Sample ID: 240-115711-17

Date Collected: 07/10/19 09:25
Matrix: Water
Date Received: 07/12/19 08:00

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	1.0	U	1.0	0.13	ug/L			07/18/19 18:40	1
cis-1,2-Dichloroethene	**40**		1.7	0.27	ug/L			07/23/19 16:12	1.67
1,1-Dichloroethane	**2.5**		1.0	0.17	ug/L			07/18/19 18:40	1
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L			07/18/19 18:40	1
Ethylbenzene	1.0	U	1.0	0.11	ug/L			07/18/19 18:40	1
Tetrachloroethene	**15**		1.0	0.15	ug/L			07/18/19 18:40	1
Toluene	1.0	U	1.0	0.14	ug/L			07/18/19 18:40	1
trans-1,2-Dichloroethene	**0.87**	**J**	1.0	0.19	ug/L			07/18/19 18:40	1
1,1,1-Trichloroethane	**0.65**	**J**	1.0	0.24	ug/L			07/18/19 18:40	1
Trichloroethene	**31**		1.0	0.10	ug/L			07/18/19 18:40	1
Vinyl chloride	**1.3**		1.0	0.20	ug/L			07/18/19 18:40	1
Xylenes, Total	2.0	U	2.0	0.15	ug/L			07/18/19 18:40	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*79*		*59 - 120*		*07/18/19 18:40*	*1*
4-Bromofluorobenzene (Surr)	*80*		*59 - 120*		*07/23/19 16:12*	*1.67*
Dibromofluoromethane (Surr)	*108*		*75 - 128*		*07/18/19 18:40*	*1*
Dibromofluoromethane (Surr)	*106*		*75 - 128*		*07/23/19 16:12*	*1.67*
1,2-Dichloroethane-d4 (Surr)	*97*		*70 - 121*		*07/18/19 18:40*	*1*
1,2-Dichloroethane-d4 (Surr)	*96*		*70 - 121*		*07/23/19 16:12*	*1.67*
Toluene-d8 (Surr)	*98*		*70 - 123*		*07/18/19 18:40*	*1*
Toluene-d8 (Surr)	*101*		*70 - 123*		*07/23/19 16:12*	*1.67*

Client Sample ID: RMW-98/071019/

Lab Sample ID: 240-115711-18

Date Collected: 07/10/19 18:40
Matrix: Water
Date Received: 07/12/19 08:00

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	1.0	U	1.0	0.13	ug/L			07/18/19 19:04	1
cis-1,2-Dichloroethene	**6.8**		1.0	0.16	ug/L			07/18/19 19:04	1
1,1-Dichloroethane	**1.6**		1.0	0.17	ug/L			07/18/19 19:04	1
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L			07/18/19 19:04	1
Ethylbenzene	1.0	U	1.0	0.11	ug/L			07/18/19 19:04	1
Tetrachloroethene	**35**		1.7	0.25	ug/L			07/23/19 16:36	1.67
Toluene	1.0	U	1.0	0.14	ug/L			07/18/19 19:04	1
trans-1,2-Dichloroethene	**0.29**	**J**	1.0	0.19	ug/L			07/18/19 19:04	1
1,1,1-Trichloroethane	**1.2**		1.0	0.24	ug/L			07/18/19 19:04	1
Trichloroethene	**8.5**		1.0	0.10	ug/L			07/18/19 19:04	1
Vinyl chloride	**0.27**	**J**	1.0	0.20	ug/L			07/18/19 19:04	1

Client Sample ID: RMW-98/071019/

Lab Sample ID: 240-115711-18

Date Collected: 07/10/19 18:40
Matrix: Water
Date Received: 07/12/19 08:00

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Xylenes, Total	2.0	U	2.0	0.15	ug/L			07/18/19 19:04	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*76*		*59 - 120*		*07/18/19 19:04*	*1*
4-Bromofluorobenzene (Surr)	*79*		*59 - 120*		*07/23/19 16:36*	*1.67*
Dibromofluoromethane (Surr)	*101*		*75 - 128*		*07/18/19 19:04*	*1*
Dibromofluoromethane (Surr)	*105*		*75 - 128*		*07/23/19 16:36*	*1.67*
1,2-Dichloroethane-d4 (Surr)	*96*		*70 - 121*		*07/18/19 19:04*	*1*
1,2-Dichloroethane-d4 (Surr)	*97*		*70 - 121*		*07/23/19 16:36*	*1.67*
Toluene-d8 (Surr)	*96*		*70 - 123*		*07/18/19 19:04*	*1*
Toluene-d8 (Surr)	*97*		*70 - 123*		*07/23/19 16:36*	*1.67*

Client Sample ID: RMW-99/071019/

Lab Sample ID: 240-115711-19

Date Collected: 07/10/19 17:05
Matrix: Water
Date Received: 07/12/19 08:00

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	1.0	U	1.0	0.13	ug/L			07/18/19 19:28	1
cis-1,2-Dichloroethene	**2.9**		1.0	0.16	ug/L			07/18/19 19:28	1
1,1-Dichloroethane	**2.1**		1.0	0.17	ug/L			07/18/19 19:28	1
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L			07/18/19 19:28	1
Ethylbenzene	1.0	U	1.0	0.11	ug/L			07/18/19 19:28	1
Tetrachloroethene	**35**		1.7	0.25	ug/L			07/23/19 17:00	1.67
Toluene	1.0	U	1.0	0.14	ug/L			07/18/19 19:28	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			07/18/19 19:28	1
1,1,1-Trichloroethane	**0.77**	**J**	1.0	0.24	ug/L			07/18/19 19:28	1
Trichloroethene	**2.3**		1.0	0.10	ug/L			07/18/19 19:28	1
Vinyl chloride	**0.26**	**J**	1.0	0.20	ug/L			07/18/19 19:28	1
Xylenes, Total	2.0	U	2.0	0.15	ug/L			07/18/19 19:28	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*75*		*59 - 120*		*07/18/19 19:28*	*1*
4-Bromofluorobenzene (Surr)	*80*		*59 - 120*		*07/23/19 17:00*	*1.67*
Dibromofluoromethane (Surr)	*110*		*75 - 128*		*07/18/19 19:28*	*1*
Dibromofluoromethane (Surr)	*112*		*75 - 128*		*07/23/19 17:00*	*1.67*
1,2-Dichloroethane-d4 (Surr)	*99*		*70 - 121*		*07/18/19 19:28*	*1*
1,2-Dichloroethane-d4 (Surr)	*100*		*70 - 121*		*07/23/19 17:00*	*1.67*
Toluene-d8 (Surr)	*94*		*70 - 123*		*07/18/19 19:28*	*1*
Toluene-d8 (Surr)	*95*		*70 - 123*		*07/23/19 17:00*	*1.67*

Client Sample ID: WSU-23/071019/

Lab Sample ID: 240-115711-20

Date Collected: 07/10/19 14:20
Matrix: Water
Date Received: 07/12/19 08:00

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	1.0	U	1.0	0.13	ug/L			07/18/19 19:52	1
cis-1,2-Dichloroethene	**0.77**	**J**	1.0	0.16	ug/L			07/18/19 19:52	1
1,1-Dichloroethane	**0.86**	**J**	1.0	0.17	ug/L			07/18/19 19:52	1
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L			07/18/19 19:52	1

Client Sample ID: WSU-23/071019/

Lab Sample ID: 240-115711-20

Date Collected: 07/10/19 14:20
Matrix: Water
Date Received: 07/12/19 08:00

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ethylbenzene	1.0	U	1.0	0.11	ug/L			07/18/19 19:52	1
Tetrachloroethene	**28**		1.0	0.15	ug/L			07/18/19 19:52	1
Toluene	1.0	U	1.0	0.14	ug/L			07/18/19 19:52	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			07/18/19 19:52	1
1,1,1-Trichloroethane	**1.7**		1.0	0.24	ug/L			07/18/19 19:52	1
Trichloroethene	**3.7**		1.0	0.10	ug/L			07/18/19 19:52	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			07/18/19 19:52	1
Xylenes, Total	2.0	U	2.0	0.15	ug/L			07/18/19 19:52	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*77*		*59 - 120*		*07/18/19 19:52*	*1*
Dibromofluoromethane (Surr)	*112*		*75 - 128*		*07/18/19 19:52*	*1*
1,2-Dichloroethane-d4 (Surr)	*100*		*70 - 121*		*07/18/19 19:52*	*1*
Toluene-d8 (Surr)	*93*		*70 - 123*		*07/18/19 19:52*	*1*

Client Sample ID: DUP-1/070919/

Lab Sample ID: 240-115711-21

Date Collected: 07/09/19 00:00
Matrix: Water
Date Received: 07/12/19 08:00

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	1.0	U	1.0	0.13	ug/L			07/18/19 20:16	1
cis-1,2-Dichloroethene	**0.62**	**J**	1.0	0.16	ug/L			07/18/19 20:16	1
1,1-Dichloroethane	**1.8**		1.0	0.17	ug/L			07/18/19 20:16	1
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L			07/18/19 20:16	1
Ethylbenzene	1.0	U	1.0	0.11	ug/L			07/18/19 20:16	1
Tetrachloroethene	**0.26**	**J**	1.0	0.15	ug/L			07/18/19 20:16	1
Toluene	1.0	U	1.0	0.14	ug/L			07/18/19 20:16	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			07/18/19 20:16	1
1,1,1-Trichloroethane	**2.3**		1.0	0.24	ug/L			07/18/19 20:16	1
Trichloroethene	**0.40**	**J**	1.0	0.10	ug/L			07/18/19 20:16	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			07/18/19 20:16	1
Xylenes, Total	2.0	U	2.0	0.15	ug/L			07/18/19 20:16	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*78*		*59 - 120*		*07/18/19 20:16*	*1*
Dibromofluoromethane (Surr)	*112*		*75 - 128*		*07/18/19 20:16*	*1*
1,2-Dichloroethane-d4 (Surr)	*104*		*70 - 121*		*07/18/19 20:16*	*1*
Toluene-d8 (Surr)	*101*		*70 - 123*		*07/18/19 20:16*	*1*

Client Sample ID: TRIP BLANK

Lab Sample ID: 240-115711-22

Date Collected: 07/11/19 08:20
Matrix: Water
Date Received: 07/12/19 08:00

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	1.0	U	1.0	0.13	ug/L			07/17/19 21:26	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.16	ug/L			07/17/19 21:26	1
1,1-Dichloroethane	1.0	U	1.0	0.17	ug/L			07/17/19 21:26	1
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L			07/17/19 21:26	1
Ethylbenzene	1.0	U	1.0	0.11	ug/L			07/17/19 21:26	1

Client Sample ID: TRIP BLANK

Lab Sample ID: 240-115711-22

Date Collected: 07/11/19 08:20

Matrix: Water

Date Received: 07/12/19 08:00

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			07/17/19 21:26	1
Toluene	1.0	U	1.0	0.14	ug/L			07/17/19 21:26	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			07/17/19 21:26	1
1,1,1-Trichloroethane	1.0	U	1.0	0.24	ug/L			07/17/19 21:26	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			07/17/19 21:26	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			07/17/19 21:26	1
Xylenes, Total	2.0	U	2.0	0.15	ug/L			07/17/19 21:26	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*78*		*59 - 120*		*07/17/19 21:26*	*1*
Dibromofluoromethane (Surr)	*109*		*75 - 128*		*07/17/19 21:26*	*1*
1,2-Dichloroethane-d4 (Surr)	*97*		*70 - 121*		*07/17/19 21:26*	*1*
Toluene-d8 (Surr)	*99*		*70 - 123*		*07/17/19 21:26*	*1*

Client Sample ID: EB-1/071119/

Lab Sample ID: 240-115711-23

Date Collected: 07/11/19 08:20

Matrix: Water

Date Received: 07/12/19 08:00

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	1.0	U	1.0	0.13	ug/L			07/17/19 21:50	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.16	ug/L			07/17/19 21:50	1
1,1-Dichloroethane	1.0	U	1.0	0.17	ug/L			07/17/19 21:50	1
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L			07/17/19 21:50	1
Ethylbenzene	1.0	U	1.0	0.11	ug/L			07/17/19 21:50	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			07/17/19 21:50	1
Toluene	1.0	U	1.0	0.14	ug/L			07/17/19 21:50	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			07/17/19 21:50	1
1,1,1-Trichloroethane	1.0	U	1.0	0.24	ug/L			07/17/19 21:50	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			07/17/19 21:50	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			07/17/19 21:50	1
Xylenes, Total	2.0	U	2.0	0.15	ug/L			07/17/19 21:50	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*79*		*59 - 120*		*07/17/19 21:50*	*1*
Dibromofluoromethane (Surr)	*108*		*75 - 128*		*07/17/19 21:50*	*1*
1,2-Dichloroethane-d4 (Surr)	*101*		*70 - 121*		*07/17/19 21:50*	*1*
Toluene-d8 (Surr)	*98*		*70 - 123*		*07/17/19 21:50*	*1*

Eurofins TestAmerica, Canton
4101 Shuffel Street NW
North Canton, OH 44720
Phone: 330-497-9396 Fax: 330-497-0772

~~Columbus~~ 200

1.6 | C1.7

Chain of Custody Record

eurofins | Environment Testing TestAmerica

Client Information	Sampler: Alex Van Clansberg	Lab PM: DelMonico, Michael	Carrier Tracking No(s):	COC No: 240-62293-26457.6
Client Contact: Kari Eldridge	Phone: 614-634-0722	E-Mail: michael.delmonico@testamericainc.com		Page: Page 6 of 8
Company: ARCADIS U.S., Inc				Job #:
Address: 4665 Cornell Road Suite 200	Due Date Requested:			
City: Cincinnati	TAT Requested (days):			
State, Zip: OH, 45241				
Phone:	PO #: OH000294.2019.0004B			
Email: kari.eldridge@arcadis-us.com	WO #: Project #: OH000294.2018.0004B			
Project Name: Racer Moraine	Project #: 24006917			
Site:	SSOW#:			

Analysis Requested

Preservation Codes:

A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA, M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - pH 4-5, Z - other (specify)

Other:

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	8260B - (MOD) Custom Sublist	9060 - TOC	9251 - Local Method	300.0_28D - Sulfate	6010B - (MOD) Custom Sublist	SM4500_S2_F - (MOD) Local Method	6010B - Fe-Mn - FF	Total Number of containers	Special Instructions/Note:
			Preservation Code:				A	S	N	N	D	CB	D		
CMW-91/071119/	07/11/19	13:05	G	Water			3							3	210
RMW-91/071119/MS	07/11/19	13:05	G	Water			3							3	
RMW-91/071119/MSD	07/11/19	13:05	G	Water			3							3	Dayton
RMW-92/071119/	07/11/19	14:00	G	Water			3							3	
RMW-93/071119/	07/11/19	09:50	G	Water			3							3	
RMW-94/071119/	07/11/19	11:10	G	Water			3							3	
GM-6/071119/	07/11/19	16:30	G	Water			3		X	1	1	1	1	7	one 500 mL unpreserved collected
GM-195/071219/	07/12/19	08:40	G	Water			3		X	1	1	1	1	7	1 500 mL unpreserved collected
DUP-2/071119/	07/11/19		G	Water			3							3	
EB-2/071119/	07/11/19		G	Water			3							3	
				Water											

240-115797 Chain of Custody

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months

Deliverable Requested: I, II, III, IV, Other (specify)

Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

	Relinquished by	Date/Time	Company	Received by	Date/Time	Company
1		7/12/19 1330	Arcadis		7-12-19 1400	ETA
2						
3		7-12-19 1600	ETA		7/13/19 800	TAS

Custody Seals Intact: Δ Yes Δ No | Custody Seal No.:

Cooler Temperature(s) °C and Other Remarks:

Ver: 01/16/2019

09/05/2019

Eurofins TestAmerica, Canton
4101 Shuffel Street NW
North Canton, OH 44720
Phone: 330-497-9396 Fax: 330-497-0772

~~Columbus~~ ~~200~~

Chain of Custody Record

eurofins Environment Testing TestAmerica

Client Information	Sampler: S CLARK	Lab PM: DelMonico, Michael	Carrier Tracking No(s):	COC No: 240-62293-26457.7
Client Contact: Kari Eldridge	Phone: 614 940 2210	E-Mail: michael.delmonico@testamericainc.com		Page: Page 7 of 8
Company: ARCADIS U.S., Inc				Job #:
Address: 4665 Cornell Road Suite 200	Due Date Requested:			
City: Cincinnati	TAT Requested (days):			
State, Zip: OH, 45241				
Phone:	PO #: OH000294.2019.0004B			
Email: kari.eldridge@arcadis-us.com	WO #: Project #: OH000294.2018.0004B			
Project Name: Racer Moraine	Project #: 24006917			
Site:	SSOW#:			

Analysis Requested

Preservation Codes:

A - HCL	M - Hexane
B - NaOH	N - None
C - Zn Acetate	O - AsNaO2
D - Nitric Acid	P - Na2O4S
E - NaHSO4	Q - Na2SO3
F - MeOH	R - Na2S2O3
G - Amchlor	S - H2SO4
H - Ascorbic Acid	T - TSP Dodecahydrate
I - Ice	U - Acetone
J - DI Water	V - MCAA
K - EDTA	W - pH 4-5
L - EDA	Z - other (specify)

Other:

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	8260B - (MOD) Custom Sublist	9060 - TOC	9251 - Local Method	300.0_28D - Sulfate (~~Chloride~~)	6010B - (MOD) Custom Sublist	SM4600_S2_F - (MOD) Local Method	6010B - Fe-Mn - FF	Total Number of containers	Special Instructions/Note:
			Preservation Code:				A	S	N	N	D	CB	D		
GM-8/071119/	071119	1015	G	Water			3			1	1	1	1	7	ONLY 1 500ml UNPRESERVED COLLECTED
GM-32/071119/	071119	1435	G	Water			3	2						5	
DW-13/071119/	071119	1225	G	Water			3							3	
GM-9/071119/	071119	1140	G	Water			3							3	
GM-200/071119/	071119	1005	G	Water			3								
GM-2/071219/	071219	0840	G	Water			3			1	1	1	1	3	ONLY 1 500ml UNPRESERVED COLLECTED
EB-1/071219/	071219	0700	G	Water			3							3	
TRIP BLANK	071219	0910	G	Water			3							3	
				Water											
				Water											
				Water											

210 Dayton

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months

Deliverable Requested: I, II, III, IV, Other (specify)

Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Stuart Clark	071219 1400	ARCADIS	Michael Delmonico	7-12-19 1400	ETA
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by: Michael Delmonico	Date/Time: 7-12-19 1600	Company ETA	Received by:	Date/Time: 7/13/19 800	Company THL

Custody Seals Intact: Δ Yes Δ No | Custody Seal No.:

Cooler Temperature(s) °C and Other Remarks:

Ver: 01/16/2019

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09/05/2019

Client Sample ID: RMW-91/071119/

Lab Sample ID: 240-115797-1

Date Collected: 07/11/19 13:05

Matrix: Water

Date Received: 07/13/19 08:00

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	5.0	U	5.0	0.65	ug/L			07/18/19 22:15	5
cis-1,2-Dichloroethene	**25**		5.0	0.80	ug/L			07/18/19 22:15	5
1,1-Dichloroethane	**2.5**	**J**	5.0	0.85	ug/L			07/18/19 22:15	5
1,1-Dichloroethene	5.0	U	5.0	0.95	ug/L			07/18/19 22:15	5
Ethylbenzene	5.0	U	5.0	0.55	ug/L			07/18/19 22:15	5
Tetrachloroethene	**130**		5.0	0.75	ug/L			07/18/19 22:15	5
Toluene	5.0	U	5.0	0.70	ug/L			07/18/19 22:15	5
trans-1,2-Dichloroethene	**2.3**	**J**	5.0	0.95	ug/L			07/18/19 22:15	5
1,1,1-Trichloroethane	**1.8**	**J**	5.0	1.2	ug/L			07/18/19 22:15	5
Trichloroethene	**62**		5.0	0.50	ug/L			07/18/19 22:15	5
Vinyl chloride	5.0	U	5.0	1.0	ug/L			07/18/19 22:15	5
Xylenes, Total	10	U	10	0.75	ug/L			07/18/19 22:15	5

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*79*		*59 - 120*		*07/18/19 22:15*	*5*
Dibromofluoromethane (Surr)	*110*		*75 - 128*		*07/18/19 22:15*	*5*
1,2-Dichloroethane-d4 (Surr)	*98*		*70 - 121*		*07/18/19 22:15*	*5*
Toluene-d8 (Surr)	*96*		*70 - 123*		*07/18/19 22:15*	*5*

Client Sample ID: RMW-92/071119/

Lab Sample ID: 240-115797-2

Date Collected: 07/11/19 14:00

Matrix: Water

Date Received: 07/13/19 08:00

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	1.0	U	1.0	0.13	ug/L			07/18/19 21:04	1
cis-1,2-Dichloroethene	**0.83**	**J**	1.0	0.16	ug/L			07/18/19 21:04	1
1,1-Dichloroethane	**0.55**	**J**	1.0	0.17	ug/L			07/18/19 21:04	1
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L			07/18/19 21:04	1
Ethylbenzene	1.0	U	1.0	0.11	ug/L			07/18/19 21:04	1
Tetrachloroethene	**57**		2.0	0.30	ug/L			07/23/19 17:24	2
Toluene	1.0	U	1.0	0.14	ug/L			07/18/19 21:04	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			07/18/19 21:04	1
1,1,1-Trichloroethane	**1.6**		1.0	0.24	ug/L			07/18/19 21:04	1
Trichloroethene	**1.1**		1.0	0.10	ug/L			07/18/19 21:04	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			07/18/19 21:04	1
Xylenes, Total	2.0	U	2.0	0.15	ug/L			07/18/19 21:04	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*83*		*59 - 120*		*07/18/19 21:04*	*1*
4-Bromofluorobenzene (Surr)	*82*		*59 - 120*		*07/23/19 17:24*	*2*
Dibromofluoromethane (Surr)	*109*		*75 - 128*		*07/18/19 21:04*	*1*
Dibromofluoromethane (Surr)	*107*		*75 - 128*		*07/23/19 17:24*	*2*
1,2-Dichloroethane-d4 (Surr)	*98*		*70 - 121*		*07/18/19 21:04*	*1*
1,2-Dichloroethane-d4 (Surr)	*96*		*70 - 121*		*07/23/19 17:24*	*2*
Toluene-d8 (Surr)	*93*		*70 - 123*		*07/18/19 21:04*	*1*
Toluene-d8 (Surr)	*98*		*70 - 123*		*07/23/19 17:24*	*2*

Client Sample ID: RMW-93/071119/

Lab Sample ID: 240-115797-3

Date Collected: 07/11/19 09:50
Matrix: Water
Date Received: 07/13/19 08:00

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	2.5	U	2.5	0.33	ug/L			07/18/19 21:28	2.5
cis-1,2-Dichloroethene	**1.7**	**J**	2.5	0.40	ug/L			07/18/19 21:28	2.5
1,1-Dichloroethane	**0.66**	**J**	2.5	0.43	ug/L			07/18/19 21:28	2.5
1,1-Dichloroethene	2.5	U	2.5	0.48	ug/L			07/18/19 21:28	2.5
Ethylbenzene	2.5	U	2.5	0.28	ug/L			07/18/19 21:28	2.5
Tetrachloroethene	**90**		2.5	0.38	ug/L			07/18/19 21:28	2.5
Toluene	2.5	U	2.5	0.35	ug/L			07/18/19 21:28	2.5
trans-1,2-Dichloroethene	2.5	U	2.5	0.48	ug/L			07/18/19 21:28	2.5
1,1,1-Trichloroethane	**2.0**	**J**	2.5	0.60	ug/L			07/18/19 21:28	2.5
Trichloroethene	**7.2**		2.5	0.25	ug/L			07/18/19 21:28	2.5
Vinyl chloride	2.5	U	2.5	0.50	ug/L			07/18/19 21:28	2.5
Xylenes, Total	5.0	U	5.0	0.38	ug/L			07/18/19 21:28	2.5

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*77*		*59 - 120*		*07/18/19 21:28*	*2.5*
Dibromofluoromethane (Surr)	*107*		*75 - 128*		*07/18/19 21:28*	*2.5*
1,2-Dichloroethane-d4 (Surr)	*100*		*70 - 121*		*07/18/19 21:28*	*2.5*
Toluene-d8 (Surr)	*95*		*70 - 123*		*07/18/19 21:28*	*2.5*

Client Sample ID: RMW-94/071119/

Lab Sample ID: 240-115797-4

Date Collected: 07/11/19 11:10
Matrix: Water
Date Received: 07/13/19 08:00

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	1.7	U	1.7	0.22	ug/L			07/18/19 21:51	1.67
cis-1,2-Dichloroethene	**0.40**	**J**	1.7	0.27	ug/L			07/18/19 21:51	1.67
1,1-Dichloroethane	**0.39**	**J**	1.7	0.28	ug/L			07/18/19 21:51	1.67
1,1-Dichloroethene	1.7	U	1.7	0.32	ug/L			07/18/19 21:51	1.67
Ethylbenzene	1.7	U	1.7	0.18	ug/L			07/18/19 21:51	1.67
Tetrachloroethene	**58**		1.7	0.25	ug/L			07/18/19 21:51	1.67
Toluene	1.7	U	1.7	0.23	ug/L			07/18/19 21:51	1.67
trans-1,2-Dichloroethene	1.7	U	1.7	0.32	ug/L			07/18/19 21:51	1.67
1,1,1-Trichloroethane	**1.2**	**J**	1.7	0.40	ug/L			07/18/19 21:51	1.67
Trichloroethene	**0.71**	**J**	1.7	0.17	ug/L			07/18/19 21:51	1.67
Vinyl chloride	1.7	U	1.7	0.33	ug/L			07/18/19 21:51	1.67
Xylenes, Total	3.3	U	3.3	0.25	ug/L			07/18/19 21:51	1.67

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*80*		*59 - 120*		*07/18/19 21:51*	*1.67*
Dibromofluoromethane (Surr)	*109*		*75 - 128*		*07/18/19 21:51*	*1.67*
1,2-Dichloroethane-d4 (Surr)	*98*		*70 - 121*		*07/18/19 21:51*	*1.67*
Toluene-d8 (Surr)	*95*		*70 - 123*		*07/18/19 21:51*	*1.67*

Client Sample ID: GM-6/071119/

Lab Sample ID: 240-115797-5

Date Collected: 07/11/19 16:30
Matrix: Water
Date Received: 07/13/19 08:00

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	1.0	U	1.0	0.13	ug/L			07/17/19 22:14	1

Client Sample ID: GM-6/071119/

Date Collected: 07/11/19 16:30
Date Received: 07/13/19 08:00

Lab Sample ID: 240-115797-5

Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
cis-1,2-Dichloroethene	**0.38**	**J**	1.0	0.16	ug/L			07/17/19 22:14	1
1,1-Dichloroethane	**0.23**	**J**	1.0	0.17	ug/L			07/17/19 22:14	1
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L			07/17/19 22:14	1
Ethylbenzene	1.0	U	1.0	0.11	ug/L			07/17/19 22:14	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			07/17/19 22:14	1
Toluene	1.0	U	1.0	0.14	ug/L			07/17/19 22:14	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			07/17/19 22:14	1
1,1,1-Trichloroethane	1.0	U	1.0	0.24	ug/L			07/17/19 22:14	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			07/17/19 22:14	1
Vinyl chloride	**0.25**	**J**	1.0	0.20	ug/L			07/17/19 22:14	1
Xylenes, Total	2.0	U	2.0	0.15	ug/L			07/17/19 22:14	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*79*		*59 - 120*		*07/17/19 22:14*	*1*
Dibromofluoromethane (Surr)	*107*		*75 - 128*		*07/17/19 22:14*	*1*
1,2-Dichloroethane-d4 (Surr)	*96*		*70 - 121*		*07/17/19 22:14*	*1*
Toluene-d8 (Surr)	*100*		*70 - 123*		*07/17/19 22:14*	*1*

Method: 6010B - Metals (ICP) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	**5400**		100	26	ug/L		07/15/19 14:00	07/17/19 00:33	1
Manganese	**180**		15	2.1	ug/L		07/15/19 14:00	07/17/19 00:33	1

Method: 6010B - Metals (ICP) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	**5000**		100	26	ug/L		07/16/19 15:00	07/18/19 00:46	1
Manganese	**190**		15	2.1	ug/L		07/16/19 15:00	07/18/19 00:46	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	**45**		5.0	1.7	mg/L			07/24/19 23:04	5
Sulfide	1.0	U	1.0	0.58	mg/L			07/17/19 13:47	1

Client Sample ID: GM-19S/071219/

Date Collected: 07/12/19 08:40
Date Received: 07/13/19 08:00

Lab Sample ID: 240-115797-6

Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	1.0	U	1.0	0.13	ug/L			07/17/19 22:38	1
cis-1,2-Dichloroethene	**32**		1.0	0.16	ug/L			07/17/19 22:38	1
1,1-Dichloroethane	**1.9**		1.0	0.17	ug/L			07/17/19 22:38	1
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L			07/17/19 22:38	1
Ethylbenzene	1.0	U	1.0	0.11	ug/L			07/17/19 22:38	1
Tetrachloroethene	**1.0**		1.0	0.15	ug/L			07/17/19 22:38	1
Toluene	1.0	U	1.0	0.14	ug/L			07/17/19 22:38	1
trans-1,2-Dichloroethene	**0.52**	**J**	1.0	0.19	ug/L			07/17/19 22:38	1
1,1,1-Trichloroethane	1.0	U	1.0	0.24	ug/L			07/17/19 22:38	1
Trichloroethene	**2.3**		1.0	0.10	ug/L			07/17/19 22:38	1
Vinyl chloride	**3.6**		1.0	0.20	ug/L			07/17/19 22:38	1
Xylenes, Total	2.0	U	2.0	0.15	ug/L			07/17/19 22:38	1

Client Sample ID: GM-19S/071219/

Lab Sample ID: 240-115797-6

Date Collected: 07/12/19 08:40
Matrix: Water
Date Received: 07/13/19 08:00

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*81*		*59 - 120*		*07/17/19 22:38*	*1*
Dibromofluoromethane (Surr)	*104*		*75 - 128*		*07/17/19 22:38*	*1*
1,2-Dichloroethane-d4 (Surr)	*93*		*70 - 121*		*07/17/19 22:38*	*1*
Toluene-d8 (Surr)	*99*		*70 - 123*		*07/17/19 22:38*	*1*

Method: 6010B - Metals (ICP) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	**4200**		100	26	ug/L		07/15/19 14:00	07/17/19 00:37	1
Manganese	**290**		15	2.1	ug/L		07/15/19 14:00	07/17/19 00:37	1

Method: 6010B - Metals (ICP) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	**4400**		100	26	ug/L		07/16/19 15:00	07/18/19 00:51	1
Manganese	**300**		15	2.1	ug/L		07/16/19 15:00	07/18/19 00:51	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	**49**		5.0	1.7	mg/L			07/24/19 23:25	5
Sulfide	1.0	U	1.0	0.58	mg/L			07/17/19 13:58	1

Client Sample ID: DUP-2/071119/

Lab Sample ID: 240-115797-7

Date Collected: 07/11/19 00:00
Matrix: Water
Date Received: 07/13/19 08:00

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	5.0	U	5.0	0.65	ug/L			07/23/19 17:48	5
cis-1,2-Dichloroethene	**25**		5.0	0.80	ug/L			07/23/19 17:48	5
1,1-Dichloroethane	**2.5**	**J**	5.0	0.85	ug/L			07/23/19 17:48	5
1,1-Dichloroethene	5.0	U	5.0	0.95	ug/L			07/23/19 17:48	5
Ethylbenzene	5.0	U	5.0	0.55	ug/L			07/23/19 17:48	5
Tetrachloroethene	**130**		5.0	0.75	ug/L			07/23/19 17:48	5
Toluene	5.0	U	5.0	0.70	ug/L			07/23/19 17:48	5
trans-1,2-Dichloroethene	**2.2**	**J**	5.0	0.95	ug/L			07/23/19 17:48	5
1,1,1-Trichloroethane	**1.8**	**J**	5.0	1.2	ug/L			07/23/19 17:48	5
Trichloroethene	**67**		5.0	0.50	ug/L			07/23/19 17:48	5
Vinyl chloride	5.0	U	5.0	1.0	ug/L			07/23/19 17:48	5
Xylenes, Total	10	U	10	0.75	ug/L			07/23/19 17:48	5

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*81*		*59 - 120*		*07/23/19 17:48*	*5*
Dibromofluoromethane (Surr)	*111*		*75 - 128*		*07/23/19 17:48*	*5*
1,2-Dichloroethane-d4 (Surr)	*101*		*70 - 121*		*07/23/19 17:48*	*5*
Toluene-d8 (Surr)	*99*		*70 - 123*		*07/23/19 17:48*	*5*

Client Sample ID: EB-2/071119/

Lab Sample ID: 240-115797-8

Date Collected: 07/11/19 00:00
Matrix: Water
Date Received: 07/13/19 08:00

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	1.0	U	1.0	0.13	ug/L			07/17/19 23:02	1

Client Sample ID: EB-2/071119/

Date Collected: 07/11/19 00:00
Date Received: 07/13/19 08:00

Lab Sample ID: 240-115797-8

Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
cis-1,2-Dichloroethene	1.0	U	1.0	0.16	ug/L			07/17/19 23:02	1
1,1-Dichloroethane	1.0	U	1.0	0.17	ug/L			07/17/19 23:02	1
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L			07/17/19 23:02	1
Ethylbenzene	1.0	U	1.0	0.11	ug/L			07/17/19 23:02	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			07/17/19 23:02	1
Toluene	1.0	U	1.0	0.14	ug/L			07/17/19 23:02	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			07/17/19 23:02	1
1,1,1-Trichloroethane	1.0	U	1.0	0.24	ug/L			07/17/19 23:02	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			07/17/19 23:02	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			07/17/19 23:02	1
Xylenes, Total	2.0	U	2.0	0.15	ug/L			07/17/19 23:02	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*80*		*59 - 120*		*07/17/19 23:02*	*1*
Dibromofluoromethane (Surr)	*109*		*75 - 128*		*07/17/19 23:02*	*1*
1,2-Dichloroethane-d4 (Surr)	*98*		*70 - 121*		*07/17/19 23:02*	*1*
Toluene-d8 (Surr)	*100*		*70 - 123*		*07/17/19 23:02*	*1*

Client Sample ID: GM-8/071119/

Date Collected: 07/11/19 17:15
Date Received: 07/13/19 08:00

Lab Sample ID: 240-115797-9

Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	**1.6**		1.0	0.13	ug/L			07/17/19 23:25	1
cis-1,2-Dichloroethene	**0.27**	**J**	1.0	0.16	ug/L			07/17/19 23:25	1
1,1-Dichloroethane	**0.40**	**J**	1.0	0.17	ug/L			07/17/19 23:25	1
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L			07/17/19 23:25	1
Ethylbenzene	1.0	U	1.0	0.11	ug/L			07/17/19 23:25	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			07/17/19 23:25	1
Toluene	1.0	U	1.0	0.14	ug/L			07/17/19 23:25	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			07/17/19 23:25	1
1,1,1-Trichloroethane	1.0	U	1.0	0.24	ug/L			07/17/19 23:25	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			07/17/19 23:25	1
Vinyl chloride	**0.25**	**J**	1.0	0.20	ug/L			07/17/19 23:25	1
Xylenes, Total	2.0	U	2.0	0.15	ug/L			07/17/19 23:25	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*79*		*59 - 120*		*07/17/19 23:25*	*1*
Dibromofluoromethane (Surr)	*107*		*75 - 128*		*07/17/19 23:25*	*1*
1,2-Dichloroethane-d4 (Surr)	*98*		*70 - 121*		*07/17/19 23:25*	*1*
Toluene-d8 (Surr)	*97*		*70 - 123*		*07/17/19 23:25*	*1*

Method: 6010B - Metals (ICP) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	**2100**		100	26	ug/L		07/15/19 14:00	07/17/19 00:41	1
Manganese	**48**		15	2.1	ug/L		07/15/19 14:00	07/17/19 00:41	1

Method: 6010B - Metals (ICP) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	**1600**		100	26	ug/L		07/16/19 15:00	07/18/19 00:55	1

Client Sample ID: GM-8/071119/

Lab Sample ID: 240-115797-9

Date Collected: 07/11/19 17:15

Matrix: Water

Date Received: 07/13/19 08:00

Method: 6010B - Metals (ICP) - Dissolved (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Manganese	**44**		15	2.1	ug/L		07/16/19 15:00	07/18/19 00:55	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	**30**		5.0	1.7	mg/L			07/24/19 23:45	5
Sulfide	1.0	U	1.0	0.58	mg/L			07/17/19 13:52	1

Client Sample ID: GM-32/071119/

Lab Sample ID: 240-115797-10

Date Collected: 07/11/19 14:35

Matrix: Water

Date Received: 07/13/19 08:00

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	1.0	U	1.0	0.13	ug/L			07/18/19 23:51	1
cis-1,2-Dichloroethene	**0.34**	**J**	1.0	0.16	ug/L			07/18/19 23:51	1
1,1-Dichloroethane	**0.45**	**J**	1.0	0.17	ug/L			07/18/19 23:51	1
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L			07/18/19 23:51	1
Ethylbenzene	1.0	U	1.0	0.11	ug/L			07/18/19 23:51	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			07/18/19 23:51	1
Toluene	1.0	U	1.0	0.14	ug/L			07/18/19 23:51	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			07/18/19 23:51	1
1,1,1-Trichloroethane	1.0	U	1.0	0.24	ug/L			07/18/19 23:51	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			07/18/19 23:51	1
Vinyl chloride	**0.26**	**J**	1.0	0.20	ug/L			07/18/19 23:51	1
Xylenes, Total	2.0	U	2.0	0.15	ug/L			07/18/19 23:51	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*80*		*59 - 120*		*07/18/19 23:51*	*1*
Dibromofluoromethane (Surr)	*106*		*75 - 128*		*07/18/19 23:51*	*1*
1,2-Dichloroethane-d4 (Surr)	*97*		*70 - 121*		*07/18/19 23:51*	*1*
Toluene-d8 (Surr)	*98*		*70 - 123*		*07/18/19 23:51*	*1*

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Organic Carbon	**3.8**		1.0	0.14	mg/L			07/18/19 08:14	1

Client Sample ID: DN-13/071119/

Lab Sample ID: 240-115797-11

Date Collected: 07/11/19 12:25

Matrix: Water

Date Received: 07/13/19 08:00

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	1.0	U	1.0	0.13	ug/L			07/18/19 15:21	1
cis-1,2-Dichloroethene	**4.4**		1.0	0.16	ug/L			07/18/19 15:21	1
1,1-Dichloroethane	**1.0**		1.0	0.17	ug/L			07/18/19 15:21	1
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L			07/18/19 15:21	1
Ethylbenzene	1.0	U	1.0	0.11	ug/L			07/18/19 15:21	1
Tetrachloroethene	**0.87**	**J**	1.0	0.15	ug/L			07/18/19 15:21	1
Toluene	1.0	U	1.0	0.14	ug/L			07/18/19 15:21	1
trans-1,2-Dichloroethene	**0.23**	**J**	1.0	0.19	ug/L			07/18/19 15:21	1
1,1,1-Trichloroethane	**0.66**	**J**	1.0	0.24	ug/L			07/18/19 15:21	1

Client Sample ID: DN-13/071119/

Lab Sample ID: 240-115797-11

Date Collected: 07/11/19 12:25
Matrix: Water
Date Received: 07/13/19 08:00

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Trichloroethene	**5.6**		1.0	0.10	ug/L			07/18/19 15:21	1
Vinyl chloride	**0.30**	**J**	1.0	0.20	ug/L			07/18/19 15:21	1
Xylenes, Total	2.0	U	2.0	0.15	ug/L			07/18/19 15:21	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*104*		*59 - 120*		*07/18/19 15:21*	*1*
Dibromofluoromethane (Surr)	*102*		*75 - 128*		*07/18/19 15:21*	*1*
1,2-Dichloroethane-d4 (Surr)	*99*		*70 - 121*		*07/18/19 15:21*	*1*
Toluene-d8 (Surr)	*107*		*70 - 123*		*07/18/19 15:21*	*1*

Client Sample ID: GM-9/071119

Lab Sample ID: 240-115797-12

Date Collected: 07/11/19 11:40
Matrix: Water
Date Received: 07/13/19 08:00

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	1.0	U	1.0	0.13	ug/L			07/18/19 15:46	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.16	ug/L			07/18/19 15:46	1
1,1-Dichloroethane	1.0	U	1.0	0.17	ug/L			07/18/19 15:46	1
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L			07/18/19 15:46	1
Ethylbenzene	1.0	U	1.0	0.11	ug/L			07/18/19 15:46	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			07/18/19 15:46	1
Toluene	1.0	U	1.0	0.14	ug/L			07/18/19 15:46	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			07/18/19 15:46	1
1,1,1-Trichloroethane	**0.51**	**J**	1.0	0.24	ug/L			07/18/19 15:46	1
Trichloroethene	**6.0**		1.0	0.10	ug/L			07/18/19 15:46	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			07/18/19 15:46	1
Xylenes, Total	2.0	U	2.0	0.15	ug/L			07/18/19 15:46	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*104*		*59 - 120*		*07/18/19 15:46*	*1*
Dibromofluoromethane (Surr)	*99*		*75 - 128*		*07/18/19 15:46*	*1*
1,2-Dichloroethane-d4 (Surr)	*101*		*70 - 121*		*07/18/19 15:46*	*1*
Toluene-d8 (Surr)	*109*		*70 - 123*		*07/18/19 15:46*	*1*

Client Sample ID: GM-20D/071119

Lab Sample ID: 240-115797-13

Date Collected: 07/11/19 10:05
Matrix: Water
Date Received: 07/13/19 08:00

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	1.0	U	1.0	0.13	ug/L			07/18/19 16:11	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.16	ug/L			07/18/19 16:11	1
1,1-Dichloroethane	1.0	U	1.0	0.17	ug/L			07/18/19 16:11	1
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L			07/18/19 16:11	1
Ethylbenzene	1.0	U	1.0	0.11	ug/L			07/18/19 16:11	1
Tetrachloroethene	**0.37**	**J**	1.0	0.15	ug/L			07/18/19 16:11	1
Toluene	1.0	U	1.0	0.14	ug/L			07/18/19 16:11	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			07/18/19 16:11	1
1,1,1-Trichloroethane	1.0	U	1.0	0.24	ug/L			07/18/19 16:11	1
Trichloroethene	**0.48**	**J**	1.0	0.10	ug/L			07/18/19 16:11	1

Client Sample ID: GM-20D/071119

Lab Sample ID: 240-115797-13

Date Collected: 07/11/19 10:05

Matrix: Water

Date Received: 07/13/19 08:00

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Vinyl chloride	1.0	U	1.0	0.20	ug/L			07/18/19 16:11	1
Xylenes, Total	2.0	U	2.0	0.15	ug/L			07/18/19 16:11	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*105*		*59 - 120*		*07/18/19 16:11*	*1*
Dibromofluoromethane (Surr)	*105*		*75 - 128*		*07/18/19 16:11*	*1*
1,2-Dichloroethane-d4 (Surr)	*99*		*70 - 121*		*07/18/19 16:11*	*1*
Toluene-d8 (Surr)	*106*		*70 - 123*		*07/18/19 16:11*	*1*

Client Sample ID: GM-2/071219

Lab Sample ID: 240-115797-14

Date Collected: 07/12/19 08:40

Matrix: Water

Date Received: 07/13/19 08:00

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	1.0	U	1.0	0.13	ug/L			07/18/19 16:36	1
cis-1,2-Dichloroethene	**0.33**	**J**	1.0	0.16	ug/L			07/18/19 16:36	1
1,1-Dichloroethane	1.0	U	1.0	0.17	ug/L			07/18/19 16:36	1
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L			07/18/19 16:36	1
Ethylbenzene	1.0	U	1.0	0.11	ug/L			07/18/19 16:36	1
Tetrachloroethene	**28**		1.0	0.15	ug/L			07/18/19 16:36	1
Toluene	1.0	U	1.0	0.14	ug/L			07/18/19 16:36	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			07/18/19 16:36	1
1,1,1-Trichloroethane	**0.33**	**J**	1.0	0.24	ug/L			07/18/19 16:36	1
Trichloroethene	**7.4**		1.0	0.10	ug/L			07/18/19 16:36	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			07/18/19 16:36	1
Xylenes, Total	2.0	U	2.0	0.15	ug/L			07/18/19 16:36	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*103*		*59 - 120*		*07/18/19 16:36*	*1*
Dibromofluoromethane (Surr)	*101*		*75 - 128*		*07/18/19 16:36*	*1*
1,2-Dichloroethane-d4 (Surr)	*99*		*70 - 121*		*07/18/19 16:36*	*1*
Toluene-d8 (Surr)	*105*		*70 - 123*		*07/18/19 16:36*	*1*

Method: 6010B - Metals (ICP) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	**210**	UB	210 ~~100~~	26	ug/L		07/15/19 14:00	07/17/19 00:54	1
Manganese	**780**		15	2.1	ug/L		07/15/19 14:00	07/17/19 00:54	1

Method: 6010B - Metals (ICP) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	100	U	100	26	ug/L		07/16/19 15:00	07/18/19 00:59	1
Manganese	**490**		15	2.1	ug/L		07/16/19 15:00	07/18/19 00:59	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	**43**		5.0	1.7	mg/L			07/25/19 00:06	5
Sulfide	1.0	U	1.0	0.58	mg/L			07/17/19 14:03	1

Client Sample ID: EB-1/071219/

Lab Sample ID: 240-115797-15

Date Collected: 07/12/19 07:00
Matrix: Water
Date Received: 07/13/19 08:00

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	1.0	U	1.0	0.13	ug/L			07/18/19 17:00	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.16	ug/L			07/18/19 17:00	1
1,1-Dichloroethane	1.0	U	1.0	0.17	ug/L			07/18/19 17:00	1
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L			07/18/19 17:00	1
Ethylbenzene	1.0	U	1.0	0.11	ug/L			07/18/19 17:00	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			07/18/19 17:00	1
Toluene	1.0	U	1.0	0.14	ug/L			07/18/19 17:00	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			07/18/19 17:00	1
1,1,1-Trichloroethane	1.0	U	1.0	0.24	ug/L			07/18/19 17:00	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			07/18/19 17:00	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			07/18/19 17:00	1
Xylenes, Total	2.0	U	2.0	0.15	ug/L			07/18/19 17:00	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*106*		*59 - 120*		*07/18/19 17:00*	*1*
Dibromofluoromethane (Surr)	*103*		*75 - 128*		*07/18/19 17:00*	*1*
1,2-Dichloroethane-d4 (Surr)	*95*		*70 - 121*		*07/18/19 17:00*	*1*
Toluene-d8 (Surr)	*109*		*70 - 123*		*07/18/19 17:00*	*1*

Client Sample ID: TRIP BLANK

Lab Sample ID: 240-115797-16

Date Collected: 07/12/19 09:10
Matrix: Water
Date Received: 07/13/19 08:00

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	1.0	U	1.0	0.13	ug/L			07/18/19 17:25	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.16	ug/L			07/18/19 17:25	1
1,1-Dichloroethane	1.0	U	1.0	0.17	ug/L			07/18/19 17:25	1
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L			07/18/19 17:25	1
Ethylbenzene	1.0	U	1.0	0.11	ug/L			07/18/19 17:25	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			07/18/19 17:25	1
Toluene	1.0	U	1.0	0.14	ug/L			07/18/19 17:25	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			07/18/19 17:25	1
1,1,1-Trichloroethane	1.0	U	1.0	0.24	ug/L			07/18/19 17:25	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			07/18/19 17:25	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			07/18/19 17:25	1
Xylenes, Total	2.0	U	2.0	0.15	ug/L			07/18/19 17:25	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*100*		*59 - 120*		*07/18/19 17:25*	*1*
Dibromofluoromethane (Surr)	*104*		*75 - 128*		*07/18/19 17:25*	*1*
1,2-Dichloroethane-d4 (Surr)	*100*		*70 - 121*		*07/18/19 17:25*	*1*
Toluene-d8 (Surr)	*106*		*70 - 123*		*07/18/19 17:25*	*1*

Eurofins TestAmerica, Canton
4101 Shuffel Street NW
North Canton, OH 44720
Phone: 330-497-9396 Fax: 330-497-0772

Columbus
209

Chain of Custody Record

2.8/2.9

eurofins | Environment Testing TestAmerica

Client Information	Sampler: Alex von Flansburg	Lab PM: DelMonico, Michael	Carrier Tracking No(s):	COC No: 240-62293-26457.7
Client Contact: Kari Eldridge	Phone: 614-634-0722	E-Mail: michael.delmonico@testamericainc.com		Page: Page 7 of 8
Company: ARCADIS U.S., Inc		Analysis Requested		Job #:
Address: 4665 Cornell Road Suite 200	Due Date Requested:			Preservation Codes:
City: Cincinnati	TAT Requested (days):			A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA, M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - pH 4-5, Z - other (specify)
State, Zip: OH, 45241				Other:
Phone:	PO #: OH000294.2019.0004B			
Email: kari.eldridge@arcadis-us.com	WO #: Project #: OH000294.2018.0004B			
Project Name: Racer Moraine	Project #: 24006917			
Site:	SSOW#:			

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	8260B - (MOD) Custom Sublist	9060 - TOC	9251 - Local Method	300.0_28D - Sulfate	6010B - (MOD) Custom Sublist	SM4500_S2_F - (MOD) Local Method	6010B - Fe-Mn - FF	Total Number of containers	Special Instructions/Note:
			Preservation Code:				A	S	N	N	D	CB	D		
GM-29/071219/	07/12/19	12:40	G	Water			3		1	1	1	1	1	8	
GM-27/071219/	07/12/19	16:20	G	Water			4		1	1	1	1	1	9	
GM-21/071219/	071219	1215	G	Water			3			1	1	1	1		
GM-23/071219/	071219	1635	G	Water			3		1	1	1	1	1		
EB-2/071219/	071219	1730	G	Water			3	2	1	1	2	1			
TRIP BLANK	071219			Water			3								
				Water											
				Water											
				Water											
				Water											
				Water											

240-115815 Chain of Custody

Possible Hazard Identification	Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological	☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months
Deliverable Requested: I, II, III, IV, Other (specify)	Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
	07/12/19 17:45	Arcadis		071219 1745	ARCADIS
Relinquished by:	Date/Time: 071219 915	Company	Received by:	Date/Time: 7-13-19 940	Company FTAL
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks:

Ver: 01/16/2019

09/05/2019

Client Sample ID: GM-29/071219/

Date Collected: 07/12/19 12:40
Date Received: 07/13/19 09:40

Lab Sample ID: 240-115815-1

Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	13	U	13	1.7	ug/L			07/18/19 17:49	13.33
cis-1,2-Dichloroethene	**380**		13	2.1	ug/L			07/18/19 17:49	13.33
1,1-Dichloroethane	**9.2**	**J**	13	2.3	ug/L			07/18/19 17:49	13.33
1,1-Dichloroethene	13	U	13	2.5	ug/L			07/18/19 17:49	13.33
Ethylbenzene	13	U	13	1.5	ug/L			07/18/19 17:49	13.33
Tetrachloroethene	**11**	**J**	13	2.0	ug/L			07/18/19 17:49	13.33
Toluene	13	U	13	1.9	ug/L			07/18/19 17:49	13.33
trans-1,2-Dichloroethene	**13**		13	2.5	ug/L			07/18/19 17:49	13.33
1,1,1-Trichloroethane	**8.4**	**J**	13	3.2	ug/L			07/18/19 17:49	13.33
Trichloroethene	**300**		13	1.3	ug/L			07/18/19 17:49	13.33
Vinyl chloride	**38**		13	2.7	ug/L			07/18/19 17:49	13.33
Xylenes, Total	27	U	27	2.0	ug/L			07/18/19 17:49	13.33

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*102*		*59 - 120*		*07/18/19 17:49*	*13.33*
Dibromofluoromethane (Surr)	*101*		*75 - 128*		*07/18/19 17:49*	*13.33*
1,2-Dichloroethane-d4 (Surr)	*95*		*70 - 121*		*07/18/19 17:49*	*13.33*
Toluene-d8 (Surr)	*106*		*70 - 123*		*07/18/19 17:49*	*13.33*

Method: 6010B - Metals (ICP) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	**3300**		100	26	ug/L		07/15/19 14:00	07/17/19 00:58	1
Manganese	**120**		15	2.1	ug/L		07/15/19 14:00	07/17/19 00:58	1

Method: 6010B - Metals (ICP) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	**4500**		100	26	ug/L		07/16/19 15:00	07/18/19 01:04	1
Manganese	**170**		15	2.1	ug/L		07/16/19 15:00	07/18/19 01:04	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	**51**		5.0	1.7	mg/L			07/25/19 00:47	5
Sulfide	1.0	U	1.0	0.58	mg/L			07/17/19 15:07	1
Chloride	**84**		10	6.0	mg/L			07/17/19 16:06	10

Client Sample ID: GM-27/071219/

Date Collected: 07/12/19 16:20
Date Received: 07/13/19 09:40

Lab Sample ID: 240-115815-2

Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	1.0	U	1.0	0.13	ug/L			07/18/19 18:14	1
cis-1,2-Dichloroethene	**9.0**		1.0	0.16	ug/L			07/18/19 18:14	1
1,1-Dichloroethane	**0.54**	**J**	1.0	0.17	ug/L			07/18/19 18:14	1
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L			07/18/19 18:14	1
Ethylbenzene	1.0	U	1.0	0.11	ug/L			07/18/19 18:14	1
Tetrachloroethene	**0.59**	**J**	1.0	0.15	ug/L			07/18/19 18:14	1
Toluene	1.0	U	1.0	0.14	ug/L			07/18/19 18:14	1
trans-1,2-Dichloroethene	**0.37**	**J**	1.0	0.19	ug/L			07/18/19 18:14	1
1,1,1-Trichloroethane	1.0	U	1.0	0.24	ug/L			07/18/19 18:14	1
Trichloroethene	**18**		1.0	0.10	ug/L			07/18/19 18:14	1

Client Sample ID: GM-27/071219/

Date Collected: 07/12/19 16:20
Date Received: 07/13/19 09:40

Lab Sample ID: 240-115815-2

Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Vinyl chloride	**0.31**	**J**	1.0	0.20	ug/L			07/18/19 18:14	1
Xylenes, Total	2.0	U	2.0	0.15	ug/L			07/18/19 18:14	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*104*		*59 - 120*		*07/18/19 18:14*	*1*
Dibromofluoromethane (Surr)	*101*		*75 - 128*		*07/18/19 18:14*	*1*
1,2-Dichloroethane-d4 (Surr)	*100*		*70 - 121*		*07/18/19 18:14*	*1*
Toluene-d8 (Surr)	*108*		*70 - 123*		*07/18/19 18:14*	*1*

Method: 6010B - Metals (ICP) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	**360**	UB	360 ~~100~~	26	ug/L		07/15/19 14:00	07/17/19 01:03	1
Manganese	**150**		15	2.1	ug/L		07/15/19 14:00	07/17/19 01:03	1

Method: 6010B - Metals (ICP) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	100	U	100	26	ug/L		07/16/19 15:00	07/18/19 01:08	1
Manganese	**140**		15	2.1	ug/L		07/16/19 15:00	07/18/19 01:08	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	**52**		5.0	1.7	mg/L			07/25/19 01:50	5
Sulfide	1.0	U	1.0	0.58	mg/L			07/17/19 15:12	1
Chloride	**140**		10	6.0	mg/L			07/17/19 16:06	10

Client Sample ID: GM-21/071219/

Date Collected: 07/12/19 12:15
Date Received: 07/13/19 09:40

Lab Sample ID: 240-115815-3

Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	1.0	U	1.0	0.13	ug/L			07/18/19 18:39	1
cis-1,2-Dichloroethene	**10**		1.0	0.16	ug/L			07/18/19 18:39	1
1,1-Dichloroethane	**6.3**		1.0	0.17	ug/L			07/18/19 18:39	1
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L			07/18/19 18:39	1
Ethylbenzene	1.0	U	1.0	0.11	ug/L			07/18/19 18:39	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			07/18/19 18:39	1
Toluene	1.0	U	1.0	0.14	ug/L			07/18/19 18:39	1
trans-1,2-Dichloroethene	**1.0**		1.0	0.19	ug/L			07/18/19 18:39	1
1,1,1-Trichloroethane	1.0	U	1.0	0.24	ug/L			07/18/19 18:39	1
Trichloroethene	**2.1**		1.0	0.10	ug/L			07/18/19 18:39	1
Vinyl chloride	**6.6**		1.0	0.20	ug/L			07/18/19 18:39	1
Xylenes, Total	2.0	U	2.0	0.15	ug/L			07/18/19 18:39	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*106*		*59 - 120*		*07/18/19 18:39*	*1*
Dibromofluoromethane (Surr)	*97*		*75 - 128*		*07/18/19 18:39*	*1*
1,2-Dichloroethane-d4 (Surr)	*98*		*70 - 121*		*07/18/19 18:39*	*1*
Toluene-d8 (Surr)	*108*		*70 - 123*		*07/18/19 18:39*	*1*

Client Sample ID: GM-21/071219/

Date Collected: 07/12/19 12:15
Date Received: 07/13/19 09:40

Lab Sample ID: 240-115815-3

Matrix: Water

Method: 6010B - Metals (ICP) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	**28000**		100	26	ug/L		07/15/19 14:00	07/17/19 01:07	1
Manganese	**520**		15	2.1	ug/L		07/15/19 14:00	07/17/19 01:07	1

Method: 6010B - Metals (ICP) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	**29000**		100	26	ug/L		07/16/19 15:00	07/18/19 01:13	1
Manganese	**550**		15	2.1	ug/L		07/16/19 15:00	07/18/19 01:13	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	**23**		10	3.5	mg/L			07/25/19 02:10	10
Sulfide	1.0	U	1.0	0.58	mg/L			07/17/19 15:18	1

Client Sample ID: GM-23/071219/

Date Collected: 07/12/19 16:35
Date Received: 07/13/19 09:40

Lab Sample ID: 240-115815-4

Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	40	U	40	5.2	ug/L			07/18/19 19:03	40
cis-1,2-Dichloroethene	**550**		40	6.4	ug/L			07/18/19 19:03	40
1,1-Dichloroethane	40	U	40	6.8	ug/L			07/18/19 19:03	40
1,1-Dichloroethene	40	U	40	7.6	ug/L			07/18/19 19:03	40
Ethylbenzene	40	U	40	4.4	ug/L			07/18/19 19:03	40
Tetrachloroethene	**22**	**J**	40	6.0	ug/L			07/18/19 19:03	40
Toluene	40	U	40	5.6	ug/L			07/18/19 19:03	40
trans-1,2-Dichloroethene	**16**	**J**	40	7.6	ug/L			07/18/19 19:03	40
1,1,1-Trichloroethane	40	U	40	9.6	ug/L			07/18/19 19:03	40
Trichloroethene	**15**	**J**	40	4.0	ug/L			07/18/19 19:03	40
Vinyl chloride	**250**		40	8.0	ug/L			07/18/19 19:03	40
Xylenes, Total	80	U	80	6.0	ug/L			07/18/19 19:03	40

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*102*		*59 - 120*		*07/18/19 19:03*	*40*
Dibromofluoromethane (Surr)	*102*		*75 - 128*		*07/18/19 19:03*	*40*
1,2-Dichloroethane-d4 (Surr)	*99*		*70 - 121*		*07/18/19 19:03*	*40*
Toluene-d8 (Surr)	*108*		*70 - 123*		*07/18/19 19:03*	*40*

Method: 6010B - Metals (ICP) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	**2800**		100	26	ug/L		07/15/19 14:00	07/17/19 01:11	1
Manganese	**330**		15	2.1	ug/L		07/15/19 14:00	07/17/19 01:11	1

Method: 6010B - Metals (ICP) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	**2700**		100	26	ug/L		07/16/19 15:00	07/18/19 01:17	1
Manganese	**380**		15	2.1	ug/L		07/16/19 15:00	07/18/19 01:17	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	**60**		5.0	1.7	mg/L			07/25/19 02:31	5

Client Sample ID: GM-23/071219/

Lab Sample ID: 240-115815-4

Date Collected: 07/12/19 16:35
Matrix: Water
Date Received: 07/13/19 09:40

General Chemistry (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfide	1.0	U	1.0	0.58	mg/L			07/17/19 15:23	1
Chloride	**81**		10	6.0	mg/L			07/17/19 16:06	10

Client Sample ID: EB-2/071219/

Lab Sample ID: 240-115815-5

Date Collected: 07/12/19 12:30
Matrix: Water
Date Received: 07/13/19 09:40

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	1.0	U	1.0	0.13	ug/L			07/18/19 19:28	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.16	ug/L			07/18/19 19:28	1
1,1-Dichloroethane	1.0	U	1.0	0.17	ug/L			07/18/19 19:28	1
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L			07/18/19 19:28	1
Ethylbenzene	1.0	U	1.0	0.11	ug/L			07/18/19 19:28	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			07/18/19 19:28	1
Toluene	1.0	U	1.0	0.14	ug/L			07/18/19 19:28	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			07/18/19 19:28	1
1,1,1-Trichloroethane	1.0	U	1.0	0.24	ug/L			07/18/19 19:28	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			07/18/19 19:28	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			07/18/19 19:28	1
Xylenes, Total	2.0	U	2.0	0.15	ug/L			07/18/19 19:28	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*103*		*59 - 120*		*07/18/19 19:28*	*1*
Dibromofluoromethane (Surr)	*101*		*75 - 128*		*07/18/19 19:28*	*1*
1,2-Dichloroethane-d4 (Surr)	*95*		*70 - 121*		*07/18/19 19:28*	*1*
Toluene-d8 (Surr)	*105*		*70 - 123*		*07/18/19 19:28*	*1*

Method: 6010B - Metals (ICP) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	**71**	**J**	100	26	ug/L		07/15/19 14:00	07/17/19 01:15	1
Manganese	15	U	15	2.1	ug/L		07/15/19 14:00	07/17/19 01:15	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	1.0	U	1.0	0.35	mg/L			07/25/19 02:52	1
Sulfide	1.0	U	1.0	0.58	mg/L			07/17/19 15:28	1
Total Organic Carbon	**0.15**	**J**	1.0	0.14	mg/L			07/18/19 10:17	1
Chloride	**2.3**		1.0	0.60	mg/L			07/17/19 16:06	1

Client Sample ID: TRIP BLANK

Lab Sample ID: 240-115815-6

Date Collected: 07/12/19 00:00
Matrix: Water
Date Received: 07/13/19 09:40

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	1.0	U	1.0	0.13	ug/L			07/18/19 19:52	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.16	ug/L			07/18/19 19:52	1
1,1-Dichloroethane	1.0	U	1.0	0.17	ug/L			07/18/19 19:52	1
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L			07/18/19 19:52	1
Ethylbenzene	1.0	U	1.0	0.11	ug/L			07/18/19 19:52	1

Client Sample ID: TRIP BLANK
Lab Sample ID: 240-115815-6

Date Collected: 07/12/19 00:00
Matrix: Water

Date Received: 07/13/19 09:40

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			07/18/19 19:52	1
Toluene	1.0	U	1.0	0.14	ug/L			07/18/19 19:52	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			07/18/19 19:52	1
1,1,1-Trichloroethane	1.0	U	1.0	0.24	ug/L			07/18/19 19:52	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			07/18/19 19:52	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			07/18/19 19:52	1
Xylenes, Total	2.0	U	2.0	0.15	ug/L			07/18/19 19:52	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*102*		*59 - 120*		*07/18/19 19:52*	*1*
Dibromofluoromethane (Surr)	*99*		*75 - 128*		*07/18/19 19:52*	*1*
1,2-Dichloroethane-d4 (Surr)	*98*		*70 - 121*		*07/18/19 19:52*	*1*
Toluene-d8 (Surr)	*108*		*70 - 123*		*07/18/19 19:52*	*1*

Eurofins TestAmerica, Canton
4101 Shuffel Street NW
North Canton, OH 44720
Phone: 330-497-9396 Fax: 330-497-0772

Columbus
209

Chain of Custody Record

2-8/2-9

eurofins | Environment Testing TestAmerica

Client Information	Sampler: Alex van Clausburg	Lab PM: DelMonico, Michael	Carrier Tracking No(s):	COC No: 240-62293-26457.7
Client Contact: Kari Eldridge	Phone: 614-634-0722	E-Mail: michael.delmonico@testamericainc.com		Page: Page 7 of 8
Company: ARCADIS U.S., Inc		Analysis Requested		Job #:
Address: 4665 Cornell Road Suite 200	Due Date Requested:			Preservation Codes: A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA, M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - pH 4-5, Z - other (specify)
City: Cincinnati	TAT Requested (days):			
State, Zip: OH, 45241				
Phone:	PO #: OH000294.2019.0004B			Other:
Email: kari.eldridge@arcadis-us.com	WO #: Project #: OH000294.2018.0004B			
Project Name: Racer Moraine	Project #: 24006917			
Site:	SSOW#:			

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	8260B - (MOD) Custom Sublist	9060 - TOC	9251 - Local Method	300.0_28D - Sulfate	6010B - (MOD) Custom Sublist	SM4500_S2_F - (MOD) Local Method	6010B - Fe-Mn - FF	Total Number of containers	Special Instructions/Note:
			Preservation Code:				A	S	N	N	D	CB	D		
GM-28R/071219/	07/12/19	10:50	G	Water			3			1	1	1	1	7	
GM-28R/071219/MS	07/12/19	10:50	G	Water			3			1	1	1	1	7	
GM-28R/071219/MSD	07/12/19	10:50	G	Water			3			1	1	1	1	7	
DUP-3/071219/	07/12/19		G	Water			3			1	1	1	1	7	
TRIP BLANK	071219			Water			3								
				Water											
				Water											
				Water											
				Water											
				Water											
				Water											

240-115817 Chain of Custody

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months

Deliverable Requested: I, II, III, IV, Other (specify)

Special Instructions/QC Requirements:

Empty Kit Relinquished by: | Date: | Time: | Method of Shipment:

Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
[signature]	07/12/19 17:45	Arcadis	[signature]	071219 1745	ARCADIS
Relinquished by: [signature]	Date/Time: 071219 1915	Company	Received by: [signature]	Date/Time: 7-13-19 940	Company EHTAC
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No | Custody Seal No.: | Cooler Temperature(s) °C and Other Remarks:

Ver: 01/16/2019

Client Sample ID: GM-28R/071219/
Lab Sample ID: 240-115817-1
Date Collected: 07/12/19 10:50
Matrix: Water
Date Received: 07/13/19 09:40

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	1.0	U	1.0	0.13	ug/L			07/18/19 20:17	1
cis-1,2-Dichloroethene	**1.1**		1.0	0.16	ug/L			07/18/19 20:17	1
1,1-Dichloroethane	1.0	U	1.0	0.17	ug/L			07/18/19 20:17	1
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L			07/18/19 20:17	1
Ethylbenzene	1.0	U	1.0	0.11	ug/L			07/18/19 20:17	1
Tetrachloroethene	**13**		1.0	0.15	ug/L			07/18/19 20:17	1
Toluene	1.0	U	1.0	0.14	ug/L			07/18/19 20:17	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			07/18/19 20:17	1
1,1,1-Trichloroethane	1.0	U	1.0	0.24	ug/L			07/18/19 20:17	1
Trichloroethene	**0.35**	**J**	1.0	0.10	ug/L			07/18/19 20:17	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			07/18/19 20:17	1
Xylenes, Total	2.0	U	2.0	0.15	ug/L			07/18/19 20:17	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*103*		*59 - 120*		*07/18/19 20:17*	*1*
Dibromofluoromethane (Surr)	*99*		*75 - 128*		*07/18/19 20:17*	*1*
1,2-Dichloroethane-d4 (Surr)	*98*		*70 - 121*		*07/18/19 20:17*	*1*
Toluene-d8 (Surr)	*109*		*70 - 123*		*07/18/19 20:17*	*1*

Method: 6010B - Metals (ICP) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	**2900**		100	26	ug/L		07/15/19 14:00	07/17/19 00:07	1
Manganese	**220**		15	2.1	ug/L		07/15/19 14:00	07/17/19 00:07	1

Method: 6010B - Metals (ICP) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	**2600**		100	26	ug/L		07/16/19 15:00	07/17/19 14:26	1
Manganese	**220**		15	2.1	ug/L		07/16/19 15:00	07/17/19 14:26	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	**29**		1.0	0.35	mg/L			07/24/19 21:41	1
Sulfide	1.0	U	1.0	0.58	mg/L			07/17/19 14:14	1

Client Sample ID: DUP-3/071219
Lab Sample ID: 240-115817-2
Date Collected: 07/12/19 10:50
Matrix: Water
Date Received: 07/13/19 09:40

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	1.0	U	1.0	0.13	ug/L			07/18/19 21:31	1
cis-1,2-Dichloroethene	**1.1**		1.0	0.16	ug/L			07/18/19 21:31	1
1,1-Dichloroethane	1.0	U	1.0	0.17	ug/L			07/18/19 21:31	1
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L			07/18/19 21:31	1
Ethylbenzene	1.0	U	1.0	0.11	ug/L			07/18/19 21:31	1
Tetrachloroethene	**13**		1.0	0.15	ug/L			07/18/19 21:31	1
Toluene	1.0	U	1.0	0.14	ug/L			07/18/19 21:31	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			07/18/19 21:31	1
1,1,1-Trichloroethane	1.0	U	1.0	0.24	ug/L			07/18/19 21:31	1
Trichloroethene	**0.32**	**J**	1.0	0.10	ug/L			07/18/19 21:31	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			07/18/19 21:31	1

Client Sample ID: DUP-3/071219 — Lab Sample ID: 240-115817-2

Date Collected: 07/12/19 10:50 — **Matrix: Water**
Date Received: 07/13/19 09:40

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Xylenes, Total	2.0	U	2.0	0.15	ug/L			07/18/19 21:31	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*104*		*59 - 120*		*07/18/19 21:31*	*1*
Dibromofluoromethane (Surr)	*101*		*75 - 128*		*07/18/19 21:31*	*1*
1,2-Dichloroethane-d4 (Surr)	*98*		*70 - 121*		*07/18/19 21:31*	*1*
Toluene-d8 (Surr)	*112*		*70 - 123*		*07/18/19 21:31*	*1*

Method: 6010B - Metals (ICP) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	**3100**		100	26	ug/L		07/15/19 14:00	07/17/19 00:24	1
Manganese	**230**		15	2.1	ug/L		07/15/19 14:00	07/17/19 00:24	1

Method: 6010B - Metals (ICP) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	**2300**		100	26	ug/L		07/16/19 15:00	07/17/19 14:57	1
Manganese	**200**		15	2.1	ug/L		07/16/19 15:00	07/17/19 14:57	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	**29**		1.0	0.35	mg/L			07/24/19 22:43	1
Sulfide	1.0	U	1.0	0.58	mg/L			07/17/19 14:30	1

Client Sample ID: TRIP BLANK — Lab Sample ID: 240-115817-3

Date Collected: 07/12/19 00:00 — **Matrix: Water**
Date Received: 07/13/19 09:40

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	1.0	U	1.0	0.13	ug/L			07/18/19 21:56	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.16	ug/L			07/18/19 21:56	1
1,1-Dichloroethane	1.0	U	1.0	0.17	ug/L			07/18/19 21:56	1
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L			07/18/19 21:56	1
Ethylbenzene	1.0	U	1.0	0.11	ug/L			07/18/19 21:56	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			07/18/19 21:56	1
Toluene	1.0	U	1.0	0.14	ug/L			07/18/19 21:56	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			07/18/19 21:56	1
1,1,1-Trichloroethane	1.0	U	1.0	0.24	ug/L			07/18/19 21:56	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			07/18/19 21:56	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			07/18/19 21:56	1
Xylenes, Total	2.0	U	2.0	0.15	ug/L			07/18/19 21:56	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*106*		*59 - 120*		*07/18/19 21:56*	*1*
Dibromofluoromethane (Surr)	*100*		*75 - 128*		*07/18/19 21:56*	*1*
1,2-Dichloroethane-d4 (Surr)	*94*		*70 - 121*		*07/18/19 21:56*	*1*
Toluene-d8 (Surr)	*111*		*70 - 123*		*07/18/19 21:56*	*1*

CHAIN-OF-CUSTODY Analytical Request Document

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Chain-of-Custody is a LEGAL DOCUMENT - Complete all relevent fields

LAB USE ONLY- Affix Workorder/Login Label Here or List Pace Workorder Number or MTJL Log-in Number Here JW 7/15/19

30876

ALL SHADED AREAS are for LAB USE ONLY

Company: ARCADIS	Billing Information:
Address: 4665 CORNELL RD STE 200	
Report To: KARI ELDRIDGE	Email To: KARI.ELDRIDGE@ARCADIS-US.COM
Copy To:	Site Collection Info/Address:
Customer Project Name/Number: RACER MORAINE	State: OH / County/City: Time Zone Collected: [ ] PT [ ] MT [ ] CT [ ] ET
Phone: Email:	Site/Facility ID #: Compliance Monitoring? [ ] Yes [ ] No
Collected By (print):	Purchase Order #: Quote #: DW PWS ID #: DW Location Code:
Collected By (signature):	Turnaround Date Required: Immediately Packed on Ice: [ ] Yes [ ] No
Sample Disposal: [ ] Dispose as appropriate [ ] Return [ ] Archive: _____ [ ] Hold: _____	Rush: [ ] Same Day [ ] Next Day [ ] 2 Day [ ] 3 Day [ ] 4 Day [ ] 5 Day (Expedite Charges Apply)
	Field Filtered (if applicable): [ ] Yes [ ] No Analysis: _____

Container Preservative Type **: B

Lab Project Manager:

** Preservative Types: (1) nitric acid, (2) sulfuric acid, (3) hydrochloric acid, (4) sodium hydroxide, (5) zinc acetate, (6) methanol, (7) sodium bisulfate, (8) sodium thiosulfate, (9) hexane, (A) ascorbic acid, (B) ammonium sulfate, (C) ammonium hydroxide, (D) TSP, (U) Unpreserved, (O) Other _____

Analyses: METHANE, ETHENE, ETHANE

Lab Profile/Line:

Lab Sample Receipt Checklist:

Custody Seals Present/Intact	Y N NA	8
Custody Signatures Present	Y N NA	8
Collector Signature Present	Y N NA	8
Bottles Intact	Y N NA	8
Correct Bottles	Y N NA	8
Sufficient Volume	Y N NA	8
Samples Received on Ice	Y N NA	8
VOA - Headspace Acceptable	Y N NA	8
USDA Regulated Soils	Y N NA	8
Samples in Holding Time	Y N NA	8
Residual Chlorine Present	Y N NA	8
Cl Strips: _____		
Sample pH Acceptable	Y N NA	8
pH Strips: _____		
Sulfide Present	Y N NA	8
Lead Acetate Strips: _____		

LAB USE ONLY:
Lab Sample # / Comments:

* Matrix Codes (Insert in Matrix box below): Drinking Water (DW), Ground Water (GW), Wastewater (WW), Product (P), Soil/Solid (SL), Oil (OL), Wipe (WP), Air (AR), Tissue (TS), Bioassay (B), Vapor (V), Other (OT)

	Customer Sample ID	Matrix *	Comp / Grab	Collected (or Composite Start) Date	Collected (or Composite Start) Time	Composite End Date	Composite End Time	Res Cl	# of Ctns	Analyses
1	GM-2/071219/	WT	G	071219	0840				3	X
2	GM-8/071119/	WT	G	071119	1715				3	X
3	GM-21/071219/	WT	G	071219	1215				3	X
4	GM-23/071219/	WT	G	071219	1635				3	X
5	EB-2/071219/	WT	G	071219	1730				3	X
6	GM-29/071219/	WT	G	07/12/19	1240				3	X
7	GM-27/071219/	WT	G	07/12/19	1620				3	X
8	GM-28R/071219/	WT	G	07/12/19	1050				3	X
9	GM-28R/071219/MS	WT	G	07/12/19	1050				3	X
10	GM-28R/071219/MSD	WT	G	07/12/19	1050				3	X

Customer Remarks / Special Conditions / Possible Hazards:

Type of Ice Used: (Wet) Blue Dry None

Packing Material Used: bubble wrap

Radchem sample(s) screened (<500 cpm): Y N (NA)

SHORT HOLDS PRESENT (<72 hours): Y (N) N/A

Lab Tracking #: 775726152818241

Samples received via: (FEDEX) UPS Client Courier Pace Courier

Lab Sample Temperature Info:
Temp Blank Received: (Y) N NA
Therm ID#: _____
Cooler 1 Temp Upon Receipt: 0.5 oC
Cooler 1 Therm Corr. Factor: _____oC
Cooler 1 Corrected Temp: _____oC
Comments:

Relinquished by/Company: (Signature)	Date/Time:	Received by/Company: (Signature)	Date/Time:
Steve Chuck ARCADIS	071219 1915	Lodi PACE	7.15.19 0730
Relinquished by/Company: (Signature)	Date/Time:	Received by/Company: (Signature)	Date/Time:
Relinquished by/Company: (Signature)	Date/Time:	Received by/Company: (Signature)	Date/Time:

MTJL LAB USE ONLY
Table #:
Acctnum:
Template:
Prelogin:
PM:
PB:

Trip Blank Received: Y N (NA)
HCL MeOH TSP Other

Non Conformance(s): (YES) / NO

Page: _____ of: _____

CHAIN-OF-CUSTODY Analytical Request Document

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LAB USE ONLY- Affix Workorder/Login Label Here or List Pace Workorder Number or MTJL Log-in Number Here: 30876 7/15/19

ALL SHADED AREAS are for LAB USE ONLY

Company: ARCADIS	Billing Information:
Address: 4665 CORNELL RD STE 200	
Report To: KARI ELDRIDGE	Email To: KARI.ELDRIDGE@ARCADIS-US.COM
Copy To:	Site Collection Info/Address:
Customer Project Name/Number: RACER MORAINE	State: / County/City: Time Zone Collected: [ ] PT [ ] MT [ ] CT [ ] ET
Phone: Email:	Site/Facility ID #: Compliance Monitoring? [ ] Yes [ ] No
Collected By (print):	Purchase Order #: Quote #: DW PWS ID #: DW Location Code:
Collected By (signature):	Turnaround Date Required: Immediately Packed on Ice: [ ] Yes [ ] No
Sample Disposal: [ ] Dispose as appropriate [ ] Return [ ] Archive: _____ [ ] Hold: _____	Rush: [ ] Same Day [ ] Next Day [ ] 2 Day [ ] 3 Day [ ] 4 Day [ ] 5 Day (Expedite Charges Apply) Field Filtered (if applicable): [ ] Yes [ ] No Analysis: _____

Container Preservative Type **: 8

Lab Project Manager:

** Preservative Types: (1) nitric acid, (2) sulfuric acid, (3) hydrochloric acid, (4) sodium hydroxide, (5) zinc acetate, (6) methanol, (7) sodium bisulfate, (8) sodium thiosulfate, (9) hexane, (A) ascorbic acid, (B) ammonium sulfate, (C) ammonium hydroxide, (D) TSP, (U) Unpreserved, (O) Other _____

Analyses: Meth GRO, methanol, ethanol

Lab Profile/Line:

Lab Sample Receipt Checklist:

Custody Seals Present/Intact	Y	N	NA
Custody Signatures Present	Y	N	NA
Collector Signature Present	Y	N	NA
Bottles Intact	Y	N	NA
Correct Bottles	Y	N	NA
Sufficient Volume	Y	N	NA
Samples Received on Ice	Y	N	NA
VOA - Headspace Acceptable	Y	N	NA
USDA Regulated Soils	Y	N	NA
Samples in Holding Time	Y	N	NA
Residual Chlorine Present	Y	N	NA
Cl Strips: _____			
Sample pH Acceptable	Y	N	NA
pH Strips: _____			
Sulfide Present	Y	N	NA
Lead Acetate Strips: _____			

LAB USE ONLY:
Lab Sample # / Comments:

* Matrix Codes (Insert in Matrix box below): Drinking Water (DW), Ground Water (GW), Wastewater (WW), Product (P), Soil/Solid (SL), Oil (OL), Wipe (WP), Air (AR), Tissue (TS), Bioassay (B), Vapor (V), Other (OT)

Customer Sample ID	Matrix *	Comp / Grab	Collected (or Composite Start) Date	Collected (or Composite Start) Time	Composite End Date	Composite End Time	Res Cl	# of Ctns	Analyses
DUP-3 (07/12/19)	WT	G	07/12/19	[redacted]				3	X
GM-19S (07/12/19)	WT	G	07/12/19	0940				3	X
GM-6 (07/11/19)	WT	G	07/11/19	1630				3	X

Customer Remarks / Special Conditions / Possible Hazards:

Type of Ice Used: Wet Blue Dry None

Packing Material Used: bubble wrap

Radchem sample(s) screened (<500 cpm): Y N NA

SHORT HOLDS PRESENT (<72 hours): Y N N/A

Lab Tracking #: 775726152318240

Samples received via: FEDEX UPS Client Courier Pace Courier

Lab Sample Temperature Info:
Temp Blank Received: Y N NA
Therm ID#: _____
Cooler 1 Temp Upon Receipt: 0.5 oC
Cooler 1 Therm Corr. Factor: _____ oC
Cooler 1 Corrected Temp: _____ oC
Comments:

Trip Blank Received: Y N NA
HCL MeOH TSP Other

Relinquished by/Company: (Signature)	Date/Time:	Received by/Company: (Signature)	Date/Time:
ARCADIS	07/12 AB	Lab PASS	7.15.190730
Relinquished by/Company: (Signature)	Date/Time:	Received by/Company: (Signature)	Date/Time:
Relinquished by/Company: (Signature)	Date/Time:	Received by/Company: (Signature)	Date/Time:

MTJL LAB USE ONLY
Table #:
Acctnum:
Template:
Prelogin:
PM:
PB:

Non Conformance(s): YES / NO

Page: _____ of: _____

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220 William Pitt Way
Pittsburgh, PA 15238
Phone: (412) 826-5245
Fax: (412) 826-3433

ANALYTICAL RESULTS

Workorder: 30876 RACER MORAINE

Lab ID: **308760001** Date Received: 7/15/2019 07:30 Matrix: Water

Sample ID: **GM-2/071219/** Date Collected: 7/12/2019 08:40

Parameters	Results	Units	PQL	MDL	DF	Analyzed	By	Qualifiers
RISK - PAES								
Analysis Desc: AM20GAX		Analytical Method: AM20GAX						
Methane	**0.74**	ug/l	0.50	0.046	1	7/23/2019 07:35	BW	n
Ethane	**0.0064J**	ug/l	0.10	0.0050	1	7/23/2019 07:35	BW	n
Ethene	0.10 UB ~~**0.012J**~~	ug/l	0.10	0.0040	1	7/23/2019 07:35	BW	n

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ANALYTICAL RESULTS

Workorder: 30876 RACER MORAINE

Lab ID: **308760002** Date Received: 7/15/2019 07:30 Matrix: Water

Sample ID: **GM-8/071119/** Date Collected: 7/11/2019 17:15

Parameters	Results	Units	PQL	MDL	DF	Analyzed	By	Qualifiers
RISK - PAES								
Analysis Desc: AM20GAX		Analytical Method: AM20GAX						
Methane	**2700**	ug/l	0.50	0.046	1	7/23/2019 07:48	BW	n
Ethane	**64**	ug/l	0.10	0.0050	1	7/23/2019 07:48	BW	n
Ethene	**0.039J**	ug/l	0.10	0.0040	1	7/23/2019 07:48	BW	n

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ANALYTICAL RESULTS

Workorder: 30876 RACER MORAINE

Lab ID: **308760003** Date Received: 7/15/2019 07:30 Matrix: Water

Sample ID: **GM-21/071219/** Date Collected: 7/12/2019 12:15

Parameters	Results	Units	PQL	MDL	DF	Analyzed	By	Qualifiers
RISK - PAES								
Analysis Desc: AM20GAX		Analytical Method: AM20GAX						
Methane	**16000**	ug/l	0.50	0.046	1	7/23/2019 07:58	BW	n
Ethane	**4.3**	ug/l	0.10	0.0050	1	7/23/2019 07:58	BW	n
Ethene	**4.4**	ug/l	0.10	0.0040	1	7/23/2019 07:58	BW	n

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ANALYTICAL RESULTS

Workorder: 30876 RACER MORAINE

Lab ID: **308760004** Date Received: 7/15/2019 07:30 Matrix: Water

Sample ID: **GM-23/071219/** Date Collected: 7/12/2019 16:35

Parameters	Results	Units	PQL	MDL	DF	Analyzed	By	Qualifiers
RISK - PAES								
Analysis Desc: AM20GAX		Analytical Method: AM20GAX						
Methane	**2800**	ug/l	0.50	0.046	1	7/23/2019 08:10	BW	n
Ethane	**57**	ug/l	0.10	0.0050	1	7/23/2019 08:10	BW	n
Ethene	**24**	ug/l	0.10	0.0040	1	7/23/2019 08:10	BW	n

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ANALYTICAL RESULTS

Workorder: 30876 RACER MORAINE

Lab ID: **308760005** Date Received: 7/15/2019 07:30 Matrix: Water

Sample ID: **EB-2/071219/** Date Collected: 7/12/2019 17:30

Parameters	Results	Units	PQL	MDL	DF	Analyzed	By	Qualifiers
RISK - PAES								
Analysis Desc: AM20GAX		Analytical Method: AM20GAX						
Methane	**0.056J**	ug/l	0.50	0.046	1	7/26/2019 07:35	BW	n
Ethane	**0.10 U**	ug/l	0.10	0.0050	1	7/26/2019 07:35	BW	n
Ethene	**0.0065J**	ug/l	0.10	0.0040	1	7/26/2019 07:35	BW	n

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ANALYTICAL RESULTS

Workorder: 30876 RACER MORAINE

Lab ID: **308760006** Date Received: 7/15/2019 07:30 Matrix: Water

Sample ID: **GM-29/071219/** Date Collected: 7/12/2019 12:40

Parameters	Results	Units	PQL	MDL	DF	Analyzed	By	Qualifiers
RISK - PAES								
Analysis Desc: AM20GAX		Analytical Method: AM20GAX						
Methane	**3300**	ug/l	0.50	0.046	1	7/23/2019 08:33	BW	n
Ethane	**100**	ug/l	0.10	0.0050	1	7/23/2019 08:33	BW	n
Ethene	**6.2**	ug/l	0.10	0.0040	1	7/23/2019 08:33	BW	n

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ANALYTICAL RESULTS

Workorder: 30876 RACER MORAINE

Lab ID: **308760007** Date Received: 7/15/2019 07:30 Matrix: Water

Sample ID: **GM-27/071219/** Date Collected: 7/12/2019 16:20

Parameters	Results	Units	PQL	MDL	DF	Analyzed	By	Qualifiers
RISK - PAES								
Analysis Desc: AM20GAX		Analytical Method: AM20GAX						
Methane	**5.0**	ug/l	0.50	0.046	1	7/23/2019 08:43	BW	n
Ethane	**0.038J**	ug/l	0.10	0.0050	1	7/23/2019 08:43	BW	n
Ethene	**0.12**	ug/l	0.10	0.0040	1	7/23/2019 08:43	BW	n

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ANALYTICAL RESULTS

Workorder: 30876 RACER MORAINE

Lab ID: **308760008** Date Received: 7/15/2019 07:30 Matrix: Water

Sample ID: **GM-28R/071219/** Date Collected: 7/12/2019 10:50

Parameters	Results	Units	PQL	MDL	DF	Analyzed	By	Qualifiers
RISK - PAES								
Analysis Desc: AM20GAX		Analytical Method: AM20GAX						
Methane	**740**	ug/l	0.50	0.046	1	7/23/2019 08:55	BW	n
Ethane	**0.38**	ug/l	0.10	0.0050	1	7/23/2019 08:55	BW	n
Ethene	**0.082J**	ug/l	0.10	0.0040	1	7/23/2019 08:55	BW	n

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ANALYTICAL RESULTS

Workorder: 30876 RACER MORAINE

Lab ID: **308760009** Date Received: 7/15/2019 07:30 Matrix: Water

Sample ID: **GM-28R/071219/MS** Date Collected: 7/12/2019 10:50

Parameters	Results	Units	PQL	MDL	DF	Analyzed	By	Qualifiers
RISK - PAES								
Analysis Desc: AM20GAX		Analytical Method: AM20GAX						
Methane	**1500**	ug/l	0.50	0.046	1	7/23/2019 09:07	BW	n
Ethane	**37**	ug/l	0.10	0.0050	1	7/23/2019 09:07	BW	n
Ethene	**38**	ug/l	0.10	0.0040	1	7/23/2019 09:07	BW	n

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ANALYTICAL RESULTS

Workorder: 30876 RACER MORAINE

Lab ID: **308760010** Date Received: 7/15/2019 07:30 Matrix: Water

Sample ID: **GM-28R/071219/MSD** Date Collected: 7/12/2019 10:50

Parameters	Results	Units	PQL	MDL	DF	Analyzed	By	Qualifiers
RISK - PAES								
Analysis Desc: AM20GAX		Analytical Method: AM20GAX						
Methane	**1500**	ug/l	0.50	0.046	1	7/23/2019 09:18	BW	n
Ethane	**37**	ug/l	0.10	0.0050	1	7/23/2019 09:18	BW	n
Ethene	**34**	ug/l	0.10	0.0040	1	7/23/2019 09:18	BW	n

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ANALYTICAL RESULTS

Workorder: 30876 RACER MORAINE

Lab ID: **308760011** Date Received: 7/15/2019 07:30 Matrix: Water

Sample ID: **DUP-3/071219/** Date Collected: 7/12/2019 00:00

Parameters	Results	Units	PQL	MDL	DF	Analyzed	By	Qualifiers
RISK - PAES								
Analysis Desc: AM20GAX		Analytical Method: AM20GAX						
Methane	**880**	ug/l	0.50	0.046	1	7/26/2019 07:44	BW	n
Ethane	**0.45**	ug/l	0.10	0.0050	1	7/26/2019 07:44	BW	n
Ethene	**0.038J**	ug/l	0.10	0.0040	1	7/26/2019 07:44	BW	n

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ANALYTICAL RESULTS

Workorder: 30876 RACER MORAINE

Lab ID: **308760012** Date Received: 7/15/2019 07:30 Matrix: Water

Sample ID: **GM-19S/071219/** Date Collected: 7/12/2019 08:40

Parameters	Results	Units	PQL	MDL	DF	Analyzed	By	Qualifiers
RISK - PAES								
Analysis Desc: AM20GAX		Analytical Method: AM20GAX						
Methane	**600**	ug/l	0.50	0.046	1	7/24/2019 08:11	BW	n
Ethane	**0.077J**	ug/l	0.10	0.0050	1	7/24/2019 08:11	BW	n
Ethene	**0.14**	ug/l	0.10	0.0040	1	7/24/2019 08:11	BW	n

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Fax: (412) 826-3433

ANALYTICAL RESULTS

Workorder: 30876 RACER MORAINE

Lab ID: **308760013** Date Received: 7/15/2019 07:30 Matrix: Water

Sample ID: **GM-6/071119/** Date Collected: 7/11/2019 16:30

Parameters	Results	Units	PQL	MDL	DF	Analyzed	By	Qualifiers
RISK - PAES								
Analysis Desc: AM20GAX		Analytical Method: AM20GAX						
Methane	**460**	ug/l	0.50	0.046	1	7/24/2019 08:23	BW	n
Ethane	**8.5**	ug/l	0.10	0.0050	1	7/24/2019 08:23	BW	n
Ethene	**0.073J**	ug/l	0.10	0.0040	1	7/24/2019 08:23	BW	n

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ATTACHMENT E-4

Groundwater VOC Analytical Results for North and South Settling Lagoon Wells from 1999 to 2019

Attachment E-4
Groundwater VOC Analytical Results for North and South Settling Lagoon Wells from 1999 to 2019
RACER Trust Moraine Facilities
Moraine, Ohio

Well	Date	VOCs (ug/L)											
		1,1,1-TCA	1,1-DCA	1,1-DCE	Benzene	cis-1,2-DCE	Ethyl-benzene	PCE	Toluene	trans-1,2-DCE	TCE	Vinyl Chloride	Xylenes (total)
MCL		200		7	5	70	700	5	1000	100	5	2	10,000
North Settling Lagoon Monitoring Wells													
HR-4	9/14/1999	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	1.2	< 1.0 U	< 1.0 U	1.4	< 1.0 U	< 1.0 U
	9/20/2000	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
	11/6/2001	0.17 J	< 1.0 U	< 1.0 U	< 1.0 U	0.28 J	< 1.0 U	0.88 J	< 1.0 U	< 0.50 U	1.0	< 1.0 U	< 1.0 U
	9/27/2002	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 0.50 U	< 1.0 U	0.59 J	< 1.0 U	< 0.50 U	0.71 J	< 1.0 U	< 1.0 U
	9/18/2003	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 0.50 U	< 1.0 U	0.55 J	< 1.0 U	< 0.50 U	0.71 J	< 1.0 U	< 1.0 U
	9/16/2004	< 1.0 U	0.77 J	< 1.0 U	< 1.0 U	< 0.50 U	< 1.0 U	1.3	< 1.0 U	< 0.50 U	0.50 J	< 1.0 U	< 1.0 U
	10/20/2005	< 1.0 U	1.5	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	0.39 J	< 1.0 U	< 1.0 U	0.32 J	< 1.0 U	< 2.0 U
	9/25/2006	< 1.0 U	1.6	< 1.0 U	< 1.0 U	0.26 J	< 1.0 U	0.41 J	< 1.0 U	< 1.0 U	0.34 J	< 1.0 U	< 2.0 U
	9/26/2007	< 1.0 U	3.6	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	0.33 J	< 1.0 U	< 1.0 U	0.31 J	< 1.0 U	< 2.0 U
	9/30/2008	< 1.0 U	4.1	< 1.0 U	< 1.0 U	0.23 J	< 1.0 U	0.44 J	< 1.0 U	< 1.0 U	0.31 J	< 1.0 U	< 2.0 U
	11/13/2009	< 1.0 U	5.5	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	0.37 J	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 2.0 U
	9/28/2010	< 1.0 U	3.9	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	0.34 J	< 1.0 U	< 1.0 U	0.28 J	< 1.0 U	< 2.0 U
	9/28/2011	< 1.0 U	4.5	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	0.27 J	< 1.0 U	< 2.0 U
	9/7/2012	0.23 J	5	< 1.0 U	< 1.0 U	0.35 J	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	0.32 J	< 1.0 U	< 2.0 U
	9/27/2013	0.29 J	3.0	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	0.21 J	< 1.0 U	< 1.0 U	0.27 J	< 1.0 U	< 2.0 U
	10/7/2014	0.71 J	2.0	< 1.0 U	< 1.0 U	0.26 J	< 1.0 U	0.28 J	< 1.0 U	< 1.0 U	< 1.0 UB	< 1.0 U	< 2.0 U
	10/30/2015	1.2	1.6	< 1.0 U	< 1.0 U	0.32 J	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	0.33 J	< 1.0 U	< 2.0 U
	8/19/2016	2	1.6	< 1.0 U	< 1.0 U	0.42 J	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	0.36 J	< 1.0 U	< 2.0 U
	8/16/2017	1.9	2.1	< 1.0 U	< 1.0 U	0.45 J	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 2.0 U
	7/24/2018	1.6	1.6	< 1.0 U	< 1.0 U	0.45 J	< 1.0 U	0.16 J	< 1.0 U	< 1.0 U	0.29 J	< 1.0 U	< 2.0 U
	7/9/2019	2.2	1.7	0.19 J	< 1.0 U	0.56 J	< 1.0 U	0.22 J	< 1.0 U	< 1.0 U	0.29 J	< 1.0 U	< 2.0 U
W-2-N	9/14/1999	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	1.6	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	1.7	< 1.0 U	< 1.0 U
	9/19/2000	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	1.2	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
	11/6/2001	0.48 J	0.33 J	< 1.0 U	< 1.0 U	1.1	< 1.0 U	< 1.0 U	< 1.0 U	< 0.50 U	1.3	< 1.0 U	< 1.0 U
	9/19/2002	< 1.0 U	0.31 J	< 1.0 U	< 1.0 U	1.6	< 1.0 U	< 1.0 U	< 1.0 U	< 0.50 U	1.4	< 1.0 U	< 1.0 U
	9/18/2003	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	1.3	< 1.0 U	< 1.0 U	< 1.0 U	< 0.50 U	< 1.0 U	< 1.0 U	< 1.0 U
	9/16/2004	0.30 J	0.36 J	< 1.0 U	< 1.0 U	1.8	< 1.0 U	0.31 J	< 1.0 U	0.20 J	1.4	< 1.0 U	< 1.0 U
	10/20/2005	< 1.0 U	0.28 J	< 1.0 U	< 1.0 U	1.3	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	0.91 J	< 1.0 U	< 2.0 U
	9/22/2006	0.25 J	0.29 J	< 1.0 UJ	< 1.0 U	1.4 J	< 1.0 UJ	< 1.0 UJ	< 1.0 UJ	0.18 J	1 J	< 1.0 UJ	< 2.0 UJ
	9/25/2007	< 1.0 U	0.22 J	< 1.0 U	< 1.0 U	1.6	< 1.0 U	< 1.0 U	0.28 J	< 1.0 U	0.88 J	< 1.0 U	< 2.0 U
	9/29/2008	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	1.7	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	0.47 J	< 1.0 U	< 2.0 U
	11/13/2009	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	1.5	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	0.37 J	< 1.0 U	< 2.0 U
	9/24/2010	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	1.4	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 2.0 U
	9/28/2011	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	1.4	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 2.0 U
	9/6/2012	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	1.3	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 2.0 U
	9/26/2013	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	0.89 J	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 2.0 U
	10/7/2014	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	1.3	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	0.20 J	< 1.0 U	< 2.0 U
	10/30/2015	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	1.4	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	0.25 J	< 1.0 U	< 2.0 U
	8/15/2016	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	2.8	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	1.6	< 1.0 U	< 2.0 U
	8/15/2017	0.28 J	< 1.0 U	< 1.0 U	< 1.0 U	2.1	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	1.2	< 1.0 U	< 2.0 U
	7/24/2018	0.38 J	0.31 J	< 1.0 U	< 1.0 U	2.7	< 1.0 U	< 1.0 U	< 1.0 U	0.28 J	1.9	< 1.0 U	< 2.0 U
	7/9/2019	< 1.0 U	0.19 J	< 1.0 U	< 1.0 U	1.8	< 1.0 U	< 1.0 U	< 1.0 U	0.22 J	1.1	< 1.0 U	< 2.0 U

Attachment E-4
Groundwater VOC Analytical Results for North and South Settling Lagoon Wells from 1999 to 2019
RACER Trust Moraine Facilities
Moraine, Ohio

Well	Date	VOCs (ug/L)											
		1,1,1-TCA	1,1-DCA	1,1-DCE	Benzene	cis-1,2-DCE	Ethyl-benzene	PCE	Toluene	trans-1,2-DCE	TCE	Vinyl Chloride	Xylenes (total)
MCL		200		7	5	70	700	5	1000	100	5	2	10,000
W-3-N	9/17/1999	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	**291**	< 1.0 U	2.5	< 1.0 U	2.6	< 1.0 U	**13**	< 1.0 U
	9/19/2000	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	**282**	< 1.0 U	< 1.0 U	< 1.0 U	3.9	< 1.0 U	**24**	< 1.0 U
	11/7/2001	< 5.6 U	< 5.6 U	< 5.6 U	< 5.6 U	**160**	< 5.6 U	**9.0**	< 5.6 U	2.2 J	2.1 J	**7.6**	< 5.6 U
	9/23/2002	< 6.7 U	< 6.7 U	< 6.7 U	< 6.7 U	**150**	< 6.7 U	< 6.7 U	< 6.7 U	< 3.3 U	< 6.7 U	**6.5 J**	< 6.7 U
	9/17/2003	< 4.0 U	< 4.0 U	< 4.0 U	< 4.0 U	**100**	< 4.0 U	**5.1**	< 4.0 U	1.6 J	1.7 J	**6.6**	< 4.0 U
	9/16/2004	< 4.0 U	< 4.0 U	< 4.0 U	< 4.0 U	**120**	< 4.0 U	0.94 J	< 4.0 U	1.6 J	< 4.0 U	**6.1**	< 4.0 U
	10/20/2005	< 4.0 U	< 4.0 U	< 4.0 U	< 4.0 U	**84**	< 4.0 U	1.4 J	< 4.0 U	1.0 J	< 4.0 U	**8.0**	< 8.0 U
	9/25/2006	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U	**140**	< 5.0 U	< 5.0 U	< 5.0 U	1.9 J	< 5.0 U	**9.6**	< 1.0 U
	9/26/2007	< 4.0 U	< 4.0 U	< 4.0 U	< 4.0 U	**110**	< 4.0 U	< 4.0 U	< 4.0 U	1.4 J	< 4.0 U	**5.6**	< 8.0 U
	9/29/2008	< 3.3 U	< 3.3 U	< 3.3 U	< 3.3 U	**98**	< 3.3 U	< 3.3 U	< 3.3 U	1.4 J	< 3.3 U	**3.8**	< 6.7 U
	11/13/2009	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	**72**	< 2.0 U	< 2.0 U	< 2.0 U	0.99 J	< 2.0 U	**3.2**	< 4.0 U
	9/24/2010	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	56	< 2.0 U	< 2.0 U	< 2.0 U	0.79 J	< 2.0 U	**2.4**	< 4.0 U
	9/28/2011	< 2.5 U	< 2.5 U	< 2.5 U	< 2.5 U	53	< 2.5 U	0.94 J	< 2.5 U	0.80 J	< 2.5 U	**2.7**	< 5.0 U
	9/6/2012	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	41	< 2.0 U	0.60 J	< 2.0 U	0.79 J	< 2.0 U	1.4 J	< 4.0 U
	9/26/2013	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	34	< 1.0 U	0.96 J	< 1.0 U	0.64 J	< 1.0 U	1.6	< 2.0 U
	10/7/2014	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	31	< 1.0 U	0.52 J	< 1.0 U	0.47 J	< 1.0 U	1.0	< 2.0 U
	11/4/2015	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	29	< 1.0 U	< 1.0 U	< 1.0 U	0.42 J	< 1.0 U	1.3	< 2.0 U
	8/19/2016	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	22	< 1.0 U	< 1.0 U	< 1.0 U	0.34 J	< 1.0 U	1.9	< 2.0 U
	8/15/2017	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	24	< 1.0 U	< 1.0 U	< 1.0 U	0.38 J	< 1.0 U	1.4	< 2.0 U
	7/24/2018	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	16	< 1.0 U	< 1.0 U	< 1.0 U	0.33 J	< 1.0 U	1.1	< 2.0 U
	7/9/2019	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	14	< 1.0 U	< 1.0 U	< 1.0 U	0.23 J	< 1.0 U	0.81 J	< 2.0 U
W-4-N	9/17/1999	< 1.0 U	1.3	< 1.0 U	< 1.0 U	2.2	< 1.0 U	2.1	< 1.0 U	< 1.0 U	**9.8**	< 1.0 U	< 1.0 U
	9/19/2000	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	2.0	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	**7.3**	< 1.0 U	< 1.0 U
	11/7/2001	0.33 J	0.89 J	< 1.0 U	< 1.0 U	1.6	< 1.0 U	0.92 J	< 1.0 U	< 0.50 U	**7.1**	< 1.0 U	< 1.0 U
	9/24/2002	0.44 J	1.7	< 1.0 U	< 1.0 U	5.2	< 1.0 U	0.94 J	< 1.0 U	0.33 J	**8.5**	0.77 J	< 1.0 U
	9/17/2003	0.26 J	0.94 J	< 1.0 U	< 1.0 U	1.7	< 1.0 U	1.1	< 1.0 U	< 0.50 U	**8.1**	0.48 J	< 1.0 U
	9/16/2004	0.40 J	1.7	< 1.0 U	< 1.0 U	5.8	< 1.0 U	1.7	< 1.0 U	0.38 J	**12**	0.49 J	< 1.0 U
	10/20/2005	< 1.0 U	1.2	< 1.0 U	< 1.0 U	2.0	< 1.0 U	1.0	< 1.0 U	< 1.0 U	**7.2**	0.54 J	< 2.0 U
	9/25/2006	< 1.0 U	1.3	< 1.0 U	< 1.0 U	2.4	< 1.0 U	0.96 J	< 1.0 U	0.19 J	**7.6**	0.56 J	< 2.0 U
	9/26/2007	0.34 J	1.6	< 1.0 U	< 1.0 U	2.6	< 1.0 U	0.88 J	< 1.0 U	0.24 J	**10**	0.96 J	< 2.0 U
	9/29/2008	0.39 J	1.9	< 1.0 U	< 1.0 U	11	< 1.0 U	0.38 J	< 1.0 U	0.92 J	**8.4**	0.34 J	< 2.0 U
	11/13/2009	0.47 J	1.6	< 1.0 U	< 1.0 U	5.7	< 1.0 U	0.68 J	< 1.0 U	0.39 J	**15**	0.25 J	< 2.0 U
	9/24/2010	0.41 J	2.1	< 1.0 U	< 1.0 U	7.9	< 1.0 U	0.67 J	< 1.0 U	0.51 J	**13**	< 1.0 U	< 2.0 U
	9/28/2011	< 1.0 U	2.4	< 1.0 U	< 1.0 U	9.7	< 1.0 U	1.1	< 1.0 U	0.59 J	**9.9**	< 1.0 U	< 2.0 U
	9/7/2012	< 1.0 U	5.6	< 1.0 U	< 1.0 U	14	< 1.0 U	0.52 J	< 1.0 U	1.2	**6.3**	< 1.0 U	< 2.0 U
	9/27/2013	< 1.0 U	7.1	< 1.0 U	< 1.0 U	11	< 1.0 U	0.63 J	< 1.0 U	0.76 J	**7.4**	0.18 J	< 2.0 U
	10/7/2014	< 1.0 U	5.7	< 1.0 U	< 1.0 U	11	< 1.0 U	0.49 J	< 1.0 U	0.69 J	**9.2**	< 1.0 U	< 2.0 U
	11/4/2015	< 1.0 U	4.2	< 1.0 U	< 1.0 U	7.0	< 1.0 U	< 1.0 U	< 1.0 U	0.51 J	**12**	< 1.0 U	< 2.0 U
	8/19/2016	< 1.0 U	4.6	< 1.0 U	< 1.0 U	9.5	< 1.0 U	< 1.0 U	< 1.0 U	0.63 J	**10**	< 1.0 U	< 2.0 U
	8/16/2017	< 1.0 U	6.5	< 1.0 U	< 1.0 U	9.2	< 1.0 U	0.38 J	< 1.0 U	0.64 J	**8.8**	< 1.0 U	< 2.0 U
	7/24/2018	< 1.0 U	6.9	< 1.0 U	< 1.0 U	8.7	< 1.0 U	0.26 J	< 1.0 U	1.3	**6.1**	< 1.0 U	< 2.0 U
	7/9/2019	< 1.0 U	7.6	< 1.0 U	< 1.0 U	6.6	< 1.0 U	0.72 J	< 1.0 U	0.88 J	**9.2**	< 1.0 U	< 2.0 U

Attachment E-4
Groundwater VOC Analytical Results for North and South Settling Lagoon Wells from 1999 to 2019
RACER Trust Moraine Facilities
Moraine, Ohio

Well	Date	VOCs (ug/L)											
		1,1,1-TCA	1,1-DCA	1,1-DCE	Benzene	cis-1,2-DCE	Ethyl-benzene	PCE	Toluene	trans-1,2-DCE	TCE	Vinyl Chloride	Xylenes (total)
MCL		200		7	5	70	700	5	1000	100	5	2	10,000
South Settling Lagoon Monitoring Wells													
HR-17	9/23/1999	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	6.2	< 1.0 U	**16**	< 1.0 U	< 1.0 U	**7.4**	< 1.0 U	< 1.0 U
	9/28/2000	1.9	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	3.7	< 1.0 U	< 1.0 U	4.4	< 1.0 U	< 1.0 U
	11/8/2001	1.4	< 1.0 U	< 1.0 U	< 1.0 U	< 0.50 U	< 1.0 U	3.3	< 1.0 U	< 0.50 U	4.2 B	< 1.0 U	< 1.0 U
	9/18/2002	0.39 J	1.5	< 1.0 U	< 1.0 U	5.1	< 1.0 U	**22**	< 1.0 U	1.4	**12**	< 1.0 U	< 1.0 U
	9/25/2003	< 2.0 U	0.75 J	< 2.0 U	< 2.0 U	2.2	< 2.0 U	**64**	< 2.0 U	0.7 J	**10**	< 2.0 U	< 2.0 U
	9/17/2004	< 5.0 U	2.0 J	< 5.0 U	< 5.0 U	7.1	< 5.0 U	**82**	< 5.0 U	1.6 J	**18**	< 5.0 U	< 5.0 U
	10/19/2005	< 1.0 U	0.70 J	< 1.0 U	< 1.0 U	3.1	< 1.0 U	**45**	< 1.0 U	0.57 J	**8.3**	< 1.0 U	< 3.7 U
	9/18/2006	< 1.0 U	0.6 J	< 1.0 U	< 1.0 U	4.6	< 1.0 U	**34**	< 1.0 U	0.46 J	**5.6**	< 1.0 U	< 2.0 U
	9/25/2007	< 2.5 U	1.2 J	< 2.5 U	< 2.5 U	1.9 J	< 2.5 U	**51**	< 2.5 U	0.69 J	**16**	< 2.5 U	< 5.0 U
	9/26/2008	< 4.0 U	1.1 J	< 4.0 U	< 4.0 U	2.7 J	< 4.0 U	**120**	< 4.0 U	1.0 J	**31**	< 4.0 U	< 8.0 U
	11/12/2009	< 2.5 U	1.7 J	< 2.5 U	< 2.5 U	1.9 J	< 2.5 U	**85**	< 2.5 U	1.3 J	**21**	< 2.5 U	< 5.0 U
	9/23/2010	< 1.0 U	1.9	< 1.0 U	< 1.0 U	2.2	< 1.0 U	**60**	< 1.0 U	1.2 J	**18**	< 1.0 U	< 3.3 U
	9/29/2011	< 5.7 U	< 5.7 U	< 5.7 U	< 5.7 U	< 5.7 U	< 5.7 U	**110**	< 5.7 U	< 5.7 U	**57**	< 5.7 U	< 1.0 U
	9/6/2012	< 9.1 U	< 9.1 U	< 9.1 U	< 9.1 U	2.4 J	< 9.1 U	**140**	< 9.1 U	< 9.1 U	**75**	< 9.1 U	< 1.0 U
	9/25/2013	1.3	0.93 J	< 1.0 U	< 1.0 U	1.4	< 1.0 U	**150**	< 1.0 U	0.92 J	**100**	< 1.0 U	< 2.0 U
	10/7/2014	< 5.0 U	2.0 J	< 5.0 U	< 5.0 U	2.2 J	< 5.0 U	**170**	< 5.0 U	< 5.0 U	**160**	< 5.0 U	< 1.0 U
	11/4/2015	1.5	0.61 J	< 1.0 U	< 1.0 U	1.7	< 1.0 U	**150**	< 1.0 U	0.73 J	**160**	< 1.0 U	< 2.0 U
	8/25/2016	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	**170**	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 4.0 U
	8/17/2017	0.80 J	0.60 J	< 1.0 U	< 1.0 U	2.3	< 1.0 U	**150**	< 1.0 U	< 1.0 U	**24**	< 1.0 U	< 2.0 U
	7/25/2018	4.8	2.2	< 1.0 U	< 1.0 U	1.1	< 1.0 U	**180**	< 1.0 U	< 1.0 U	0.92 J	< 1.0 U	< 2.0 U
	7/9/2019	7.4	1.6	0.54 J	< 1.0 U	1.2	< 1.0 U	**150**	< 1.0 U	< 1.0 U	1.7	< 1.0 U	< 2.0 U
W-2-S	9/23/1999	1.9 J	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	**6.1**	< 1.0 U	< 1.0 U
	9/27/2000	1.6	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	5.0	< 1.0 U	< 1.0 U
	11/8/2001	1.7	0.58 J	< 1.0 U	< 1.0 U	0.49 J	< 1.0 U	< 1.0 U	< 1.0 U	< 0.50 U	**5.2 B**	< 1.0 U	< 1.0 U
	9/18/2002	1.5	0.98 J	< 1.0 U	< 1.0 U	0.90	< 1.0 U	< 1.0 U	< 1.0 U	< 0.50 U	4.9	< 1.0 U	< 1.0 U
	9/26/2003	1.4	0.99 J	< 1.0 U	< 1.0 U	0.74	< 1.0 U	< 1.0 U	0.25 J	< 0.50 U	**5.5**	< 1.0 U	< 1.0 U
	9/17/2004	1.5	1.3	< 1.0 U	< 1.0 U	1.1	< 1.0 U	0.55 J	< 1.0 U	< 0.50 U	**6.0**	< 1.0 U	< 1.0 U
	10/19/2005	1.6	1.2	< 1.0 U	< 1.0 U	0.78 J	< 1.0 U	0.36 J	< 1.0 U	< 1.0 U	**5.4**	< 1.0 U	< 2.0 U
	9/18/2006	1.8	1.2	< 1.0 U	< 1.0 U	1.2	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	**5.1**	< 1.0 U	< 2.0 U
	9/24/2007	1.4	1.1	< 1.0 U	< 1.0 U	0.89 J	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	**5.3**	< 1.0 U	< 2.0 U
	9/25/2008	1.4	0.92 J	< 1.0 U	< 1.0 U	0.78 J	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	**5.2**	< 1.0 U	< 2.0 U
	11/12/2009	1.7	1.2	< 1.0 U	0.43 J	0.90 J	< 1.0 UJ	0.35 J	< 1.0 U	< 1.0 U	**6.6**	< 1.0 U	< 2.0 U
	9/24/2010	1.4	1.1	< 1.0 U	< 1.0 U	0.82 J	< 1.0 U	0.33 J	< 1.0 U	< 1.0 U	**5.9**	< 1.0 U	< 2.0 U
	9/29/2011	1.6	1.2	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	0.44 J	< 1.0 U	< 1.0 U	**7.1**	< 1.0 U	< 2.0 U
	9/6/2012	1.6	1.1	< 1.0 U	< 1.0 U	1.1	< 1.0 U	0.35 J	< 1.0 U	< 1.0 U	**6.1**	< 1.0 U	< 2.0 U
	9/25/2013	1.8	0.86 J	< 1.0 U	< 1.0 U	1.1	< 1.0 U	0.31 J	< 1.0 U	< 1.0 U	**6.4**	< 1.0 U	< 2.0 U
	10/7/2014	0.79 J	0.80 J	< 1.0 U	< 1.0 U	1.6	< 1.0 U	0.33 J	< 1.0 U	0.34 J	5.0	< 1.0 U	< 2.0 U
	11/5/2015	< 1.0 U	0.63 J	< 1.0 U	< 1.0 U	1.1	< 1.0 U	0.36 J	< 1.0 U	0.47 J	23	< 1.0 U	< 2.0 U
	8/23/2016	1.4	1.0	< 1.0 U	< 1.0 U	1.9	< 1.0 U	0.34 J	< 1.0 U	0.30 J	**6.6**	< 1.0 U	< 2.0 U
	8/16/2017	1.3	1.1	< 1.0 U	< 1.0 U	2.4	< 1.0 U	< 1.0 U	< 1.0 U	0.40 J	**5.9**	< 1.0 U	< 2.0 U
	7/25/2018	0.98 J	0.83 J	< 1.0 U	< 1.0 U	2.2	< 1.0 U	2.0	< 1.0 U	0.32 J	**4.6**	< 1.0 U	< 2.0 U
	7/9/2019	0.60 J	0.23 J	< 1.0 U	< 1.0 U	0.29 J	< 1.0 U	**20**	< 1.0 U	< 1.0 U	2.8	< 1.0 U	< 2.0 U

Attachment E-4
Groundwater VOC Analytical Results for North and South Settling Lagoon Wells from 1999 to 2019
RACER Trust Moraine Facilities
Moraine, Ohio

Well	Date	VOCs (ug/L)											
		1,1,1-TCA	1,1-DCA	1,1-DCE	Benzene	cis-1,2-DCE	Ethyl-benzene	PCE	Toluene	trans-1,2-DCE	TCE	Vinyl Chloride	Xylenes (total)
MCL		200		7	5	70	700	5	1000	100	5	2	10,000
W-3-S	9/23/1999	3.9	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	1.1	< 1.0 U	< 1.0 U	2.6	< 1.0 U	< 1.0 U
	9/28/2000	2.8	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	2.5	< 1.0 U	< 1.0 U
	11/8/2001	1.6	< 1.0 U	< 1.0 U	< 1.0 U	< 0.50 U	< 1.0 U	0.44 J	< 1.0 U	< 0.50 U	1.5 B	< 1.0 U	< 1.0 U
	9/18/2002	2.1	< 1.0 U	< 1.0 U	< 1.0 U	< 0.50 U	< 1.0 U	0.61 J	< 1.0 U	< 0.50 U	2.4	< 1.0 U	< 1.0 U
	9/26/2003	1.8	< 1.0 U	< 1.0 U	< 1.0 U	0.34 J	< 1.0 U	0.81 J	< 1.0 U	< 0.50 U	2.0	< 1.0 U	< 1.0 U
	9/17/2004	2.4	0.21 J	< 1.0 U	< 1.0 U	< 0.50 U	< 1.0 U	1.2	< 1.0 U	< 0.50 U	2.9	< 1.0 U	< 1.0 U
	10/19/2005	2.5	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	1.0	< 1.0 U	< 1.0 U	2.9	< 1.0 U	< 2.0 U
	9/18/2006	2.5	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	0.60 J	< 1.0 U	< 1.0 U	3.4	< 1.0 U	< 2.0 U
	9/24/2007	1.4	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	0.72 J	< 1.0 U	< 1.0 U	2.0	< 1.0 U	< 2.0 U
	9/26/2008	1.2	0.21 J	< 1.0 U	< 1.0 U	0.52 J	< 1.0 U	1.3	< 1.0 U	< 1.0 U	2.1	< 1.0 U	< 2.0 U
	11/12/2009	1.2	< 1.0 U	< 1.0 U	< 1.0 U	0.33 J	< 1.0 UJ	0.87 J	< 1.0 U	< 1.0 U	2.5	< 1.0 U	< 2.0 U
	9/23/2010	0.87 J	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	0.95 J	< 1.0 U	< 1.0 U	2.3	< 1.0 U	< 2.0 U
	9/29/2011	0.51 J	0.38 J	< 1.0 U	< 1.0 U	0.72 J	< 1.0 U	2.8	< 1.0 U	0.19 J	2.6	< 1.0 U	< 2.0 U
	9/6/2012	0.60 J	0.89 J	< 1.0 U	< 1.0 U	1.0	< 1.0 U	4.4	< 1.0 U	0.49 J	**5.7**	< 1.0 U	< 2.0 U
	9/25/2013	0.49 J	1.2	< 1.0 U	< 1.0 U	1.4	< 1.0 U	**25**	< 1.0 U	0.59 J	**21**	< 1.0 U	< 2.0 U
	10/7/2014	0.76 J	0.96 J	< 1.0 U	< 1.0 U	2.3	< 1.0 U	**38**	< 1.0 U	0.59 J	**35**	< 1.0 U	< 2.0 U
	11/4/2015	< 1.0 U	0.41 J	< 1.0 U	< 1.0 U	2.6	< 1.0 U	**65**	< 1.0 U	0.31 J	**97**	< 1.0 U	< 2.0 U
	8/23/2016	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	2.1	< 2.0 U	**62**	< 2.0 U	< 2.0 U	**11**	< 2.0 U	< 4.0 U
	8/16/2017	0.62 J	0.66 J	< 1.0 U	< 1.0 U	1.6	< 1.0 U	**68**	< 1.0 U	< 1.0 U	**7.6**	< 1.0 U	< 2.0 U
	7/25/2018	0.87 J	0.61 J	< 1.0 U	< 1.0 U	1.1	< 1.0 U	**19**	< 1.0 U	0.19 J	**27**	< 1.0 U	< 2.0 U
	7/9/2019	2.5	0.83 J	< 1.0 U	< 1.0 U	1.1	< 1.0 U	**81**	< 1.0 U	< 1.0 U	**5.6**	< 1.0 U	< 2.0 U
W-4-S	9/23/1999	3.3	1.2	< 1.0 U	< 1.0 U	4.4	< 1.0 U	**31 J**	< 1.0 U	< 1.0 U	**15 J**	< 1.0 U	< 1.0 U
	9/28/2000	3.0	1.0	< 1.0 U	< 1.0 U	4.0	< 1.0 U	**15**	< 1.0 U	< 1.0 U	**11**	< 1.0 U	< 1.0 U
	11/8/2001	2.9	1.1	< 1.0 U	< 1.0 U	3.3	< 1.0 U	**13**	< 1.0 U	0.43 J	**8.9 B**	< 1.0 U	< 1.0 U
	9/18/2002	2.3	0.87 J	< 1.0 U	< 1.0 U	3.6	< 1.0 U	**17**	< 1.0 U	0.60	**9.8**	< 1.0 U	< 1.0 U
	9/26/2003	2.0	0.92 J	< 1.0 U	< 1.0 U	3.6	< 1.0 U	**24**	0.25 J	0.78	**13**	< 1.0 U	< 1.0 U
	9/17/2004	2.3	1.2	< 1.0 U	< 1.0 U	4.4	< 1.0 U	**18**	< 1.0 U	0.97	**13**	< 1.0 U	< 1.0 U
	10/19/2005	2.4	1.4	< 1.0 U	< 1.0 U	4.3	< 1.0 U	**20**	< 1.0 U	1.1	**13**	< 1.0 U	< 2.0 U
	9/19/2006	1.7	1.3	< 1.0 U	< 1.0 U	4.3	< 1.0 U	**18**	< 1.0 U	1.0	**12**	< 1.0 U	< 2.0 U
	9/24/2007	1.5	1.8	< 1.0 U	< 1.0 U	5.9	< 1.0 U	**26**	< 1.0 U	1.3	**16**	< 1.0 U	< 2.0 U
	9/26/2008	0.95 J	1.3	0.21 J	< 1.0 U	6	< 1.0 U	**32**	< 1.0 U	1.2	**16**	< 1.0 U	< 2.0 U
	11/12/2009	1.3	1.6	< 1.0 U	< 1.0 U	9.1	< 1.0 U	**39**	< 1.0 U	1.5	**23**	< 1.0 U	< 2.0 U
	9/23/2010	1.1	1.6	< 1.0 U	< 1.0 U	9.1	< 1.0 U	**31**	< 1.0 U	1.5	**20**	< 1.0 U	< 2.0 U
	9/29/2011	1.1	1.5	< 1.0 U	< 1.0 U	8.9	< 1.0 U	**31**	< 1.0 U	1.4	**21**	< 1.0 U	< 2.0 U
	9/6/2012	1.0 J	1.6 J	< 1.0 U	< 1.0 U	9.4	< 1.0 U	**26**	< 1.0 U	1.4 J	**21**	< 1.0 U	< 3.3 U
	9/25/2013	1.6	1.9	< 1.0 U	< 1.0 U	6.3	< 1.0 U	**60**	< 1.0 U	1.2	**50**	< 1.0 U	< 2.0 U
	10/7/2014	1.4 J	1.3 J	< 2.5 U	< 2.5 U	6.1	< 2.5 U	**65**	< 2.5 U	1.1 J	**63**	< 2.5 U	< 5.0 U
	11/4/2015	1.9 J	2.3	< 2.0 U	< 2.0 U	9.7	< 2.0 U	**74**	< 2.0 U	1.4 J	**72**	< 2.0 U	< 4.0 U
	8/23/2016	1.6 J	1.7 J	< 2.0 U	< 2.0 U	12	< 2.0 U	**54**	< 2.0 U	1.1 J	**45**	< 2.0 U	< 4.0 U
	8/16/2017	1.5	2.7	< 1.0 U	< 1.0 U	22	< 1.0 U	**39**	< 1.0 U	2.1	**40**	< 1.0 U	< 2.0 U
	7/25/2018	1.8	2.1	< 1.0 U	< 1.0 U	17	< 1.0 U	**68**	< 1.0 U	1.5	**42**	< 1.0 U	< 2.0 U
	7/9/2019	1.7	1.6	< 1.0 U	< 1.0 U	13	< 1.0 U	**70**	< 1.0 U	1.2	**33**	< 1.0 U	< 2.0 U

NOTES:
MCL - Maximum Contaminant Level.
ug/L - Micrograms per Liter.
< - Constituent not detected above laboratory reporting limit shown.
BOLD - Result above MCL.
J - Value is estimated.
B - Compound was found in the blank and sample.
U - Constituent not detected above laboratory reporting limit shown.
UB - Analyte considered non-detect at listed value due to associated blank contamination.
VOCs - Volatile Organic Compounds.
1,1,1-TCA - 1,1,1-Trichloroethane.
1,1-DCA - 1,1-Dichloroethane.
1,1-DCE - 1,1-Dichloroethene.
cis-1,2-DCE - cis-1,1-Dichloroethene.
PCE - Tetrachloroethene.
trans-1,2-DCE - trans-1,2-Dichloroethene.
TCE - Trichloroethene.

ATTACHMENT E-5

Laboratory Analytical Reports

eurofins | Environment Testing TestAmerica

ANALYTICAL REPORT

Eurofins TestAmerica, Canton
4101 Shuffel Street NW
North Canton, OH 44720
Tel: (330)497-9396

Laboratory Job ID: 240-115562-1
Client Project/Site: Racer Moraine

For:
ARCADIS U.S., Inc.
100 E. Campus View Blvd
Suite 200
Columbus, Ohio 43235

Attn: Carolyn Grogan

Authorized for release by:
7/24/2019 3:08:51 PM

Michael DelMonico, Project Manager I
(330)497-9396
michael.delmonico@testamericainc.com

LINKS

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This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Racer Moraine

Job ID: 240-115562-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Job ID: 240-115562-1

Laboratory: Eurofins TestAmerica, Canton

Narrative

CASE NARRATIVE

Client: ARCADIS U.S., Inc.

Project: Racer Moraine

Report Number: 240-115562-1

With the exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. In addition all laboratory quality control samples were within established control limits, with any exceptions noted below. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In some cases, due to interference or analytes present at high concentrations, samples were diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

Eurofins TestAmerica, Canton attests to the validity of the laboratory data generated by Eurofins TestAmerica facilities reported herein. All analyses performed by Eurofins TestAmerica facilities were done using established laboratory SOPs that incorporate QA/QC procedures described in the application methods. Eurofins TestAmerica's operations groups have reviewed the data for compliance with the laboratory QA/QC plan, and data have been found to be compliant with laboratory protocols unless otherwise noted below.

The test results in this report meet all NELAP requirements for parameters for which accreditation is required or available. Any exceptions to NELAP requirements are noted in this report. Pursuant to NELAP, this report may not be reproduced, except in full, without the written approval of the laboratory.

Calculations are performed before rounding to avoid round-off errors in calculated results.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

All solid sample results are reported on an "as received" basis unless otherwise indicated by the presence of a % solids value in the method header.

This laboratory report is confidential and is intended for the sole use of Eurofins TestAmerica and its client.

RECEIPT

The samples were received on 7/10/2019 8:00 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 1.9º C.

VOLATILE ORGANIC COMPOUNDS (GCMS)

Samples GM-16/070819/ (240-115562-1), RMW-102/070819/ (240-115562-2), GM-15/070819/ (240-115562-3), HR-17/070919/ (240-115562-4), HR-16/070919/ (240-115562-5) and EB-02/070819/ (240-115562-6) were analyzed for volatile organic compounds (GCMS) in accordance with EPA SW-846 Method 8260B. The samples were analyzed on 07/12/2019.

Sample HR-17/070919/ (240-115562-4)[10X] required dilution prior to analysis. The reporting limits have been adjusted accordingly.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Racer Moraine

Job ID: 240-115562-1

Method	Method Description	Protocol	Laboratory
8260B	Volatile Organic Compounds (GC/MS)	SW846	TAL CAN
5030B	Purge and Trap	SW846	TAL CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL CAN = Eurofins TestAmerica, Canton, 4101 Shuffel Street NW, North Canton, OH 44720, TEL (330)497-9396

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Racer Moraine

Job ID: 240-115562-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
240-115562-1	GM-16/070819/	Water	07/08/19 13:30	07/10/19 08:00	
240-115562-2	RMW-102/070819/	Water	07/08/19 15:10	07/10/19 08:00	
240-115562-3	GM-15/070819/	Water	07/08/19 16:50	07/10/19 08:00	
240-115562-4	HR-17/070919/	Water	07/09/19 08:45	07/10/19 08:00	
240-115562-5	HR-16/070919/	Water	07/09/19 17:55	07/10/19 08:00	
240-115562-6	EB-02/070819/	Water	07/08/19 00:00	07/10/19 08:00	

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Racer Moraine

Job ID: 240-115562-1

Client Sample ID: GM-16/070819/ — Lab Sample ID: 240-115562-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	5.6		1.0	0.16	ug/L	1		8260B	Total/NA
1,1-Dichloroethane	0.54	J	1.0	0.17	ug/L	1		8260B	Total/NA
Tetrachloroethene	13		1.0	0.15	ug/L	1		8260B	Total/NA
Trichloroethene	3.0		1.0	0.10	ug/L	1		8260B	Total/NA
Vinyl chloride	0.45	J	1.0	0.20	ug/L	1		8260B	Total/NA

Client Sample ID: RMW-102/070819/ — Lab Sample ID: 240-115562-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Tetrachloroethene	14		1.0	0.15	ug/L	1		8260B	Total/NA
Trichloroethene	0.39	J	1.0	0.10	ug/L	1		8260B	Total/NA

Client Sample ID: GM-15/070819/ — Lab Sample ID: 240-115562-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	9.4		1.0	0.16	ug/L	1		8260B	Total/NA
1,1-Dichloroethane	2.3		1.0	0.17	ug/L	1		8260B	Total/NA
trans-1,2-Dichloroethene	0.68	J	1.0	0.19	ug/L	1		8260B	Total/NA
Trichloroethene	5.7		1.0	0.10	ug/L	1		8260B	Total/NA
Vinyl chloride	0.68	J	1.0	0.20	ug/L	1		8260B	Total/NA

Client Sample ID: HR-17/070919/ — Lab Sample ID: 240-115562-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	1.2		1.0	0.16	ug/L	1		8260B	Total/NA
1,1-Dichloroethane	1.6		1.0	0.17	ug/L	1		8260B	Total/NA
1,1-Dichloroethene	0.54	J	1.0	0.19	ug/L	1		8260B	Total/NA
Tetrachloroethene	150		10	1.5	ug/L	10		8260B	Total/NA
1,1,1-Trichloroethane	7.4		1.0	0.24	ug/L	1		8260B	Total/NA
Trichloroethene	1.7		1.0	0.10	ug/L	1		8260B	Total/NA

Client Sample ID: HR-16/070919/ — Lab Sample ID: 240-115562-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	0.62	J	1.0	0.16	ug/L	1		8260B	Total/NA
1,1-Dichloroethane	0.75	J	1.0	0.17	ug/L	1		8260B	Total/NA
Tetrachloroethene	0.17	J	1.0	0.15	ug/L	1		8260B	Total/NA
trans-1,2-Dichloroethene	0.21	J	1.0	0.19	ug/L	1		8260B	Total/NA
1,1,1-Trichloroethane	0.36	J	1.0	0.24	ug/L	1		8260B	Total/NA
Trichloroethene	2.9		1.0	0.10	ug/L	1		8260B	Total/NA

Client Sample ID: EB-02/070819/ — Lab Sample ID: 240-115562-6

No Detections.

This Detection Summary does not include radiochemical test results.

Client: ARCADIS U.S., Inc.
Project/Site: Racer Moraine

Job ID: 240-115562-1

Client Sample ID: GM-16/070819/
Date Collected: 07/08/19 13:30
Date Received: 07/10/19 08:00

Lab Sample ID: 240-115562-1
Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	1.0	U	1.0	0.13	ug/L			07/12/19 18:25	1
cis-1,2-Dichloroethene	**5.6**		1.0	0.16	ug/L			07/12/19 18:25	1
1,1-Dichloroethane	**0.54**	**J**	1.0	0.17	ug/L			07/12/19 18:25	1
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L			07/12/19 18:25	1
Ethylbenzene	1.0	U	1.0	0.11	ug/L			07/12/19 18:25	1
Tetrachloroethene	**13**		1.0	0.15	ug/L			07/12/19 18:25	1
Toluene	1.0	U	1.0	0.14	ug/L			07/12/19 18:25	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			07/12/19 18:25	1
1,1,1-Trichloroethane	1.0	U	1.0	0.24	ug/L			07/12/19 18:25	1
Trichloroethene	**3.0**		1.0	0.10	ug/L			07/12/19 18:25	1
Vinyl chloride	**0.45**	**J**	1.0	0.20	ug/L			07/12/19 18:25	1
Xylenes, Total	2.0	U	2.0	0.15	ug/L			07/12/19 18:25	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*90*		*59 - 120*		*07/12/19 18:25*	*1*
Dibromofluoromethane (Surr)	*99*		*75 - 128*		*07/12/19 18:25*	*1*
1,2-Dichloroethane-d4 (Surr)	*97*		*70 - 121*		*07/12/19 18:25*	*1*
Toluene-d8 (Surr)	*101*		*70 - 123*		*07/12/19 18:25*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Racer Moraine

Job ID: 240-115562-1

Client Sample ID: RMW-102/070819/
Date Collected: 07/08/19 15:10
Date Received: 07/10/19 08:00

Lab Sample ID: 240-115562-2
Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	1.0	U	1.0	0.13	ug/L			07/12/19 18:49	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.16	ug/L			07/12/19 18:49	1
1,1-Dichloroethane	1.0	U	1.0	0.17	ug/L			07/12/19 18:49	1
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L			07/12/19 18:49	1
Ethylbenzene	1.0	U	1.0	0.11	ug/L			07/12/19 18:49	1
Tetrachloroethene	**14**		1.0	0.15	ug/L			07/12/19 18:49	1
Toluene	1.0	U	1.0	0.14	ug/L			07/12/19 18:49	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			07/12/19 18:49	1
1,1,1-Trichloroethane	1.0	U	1.0	0.24	ug/L			07/12/19 18:49	1
Trichloroethene	**0.39**	**J**	1.0	0.10	ug/L			07/12/19 18:49	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			07/12/19 18:49	1
Xylenes, Total	2.0	U	2.0	0.15	ug/L			07/12/19 18:49	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*84*		*59 - 120*		*07/12/19 18:49*	*1*
Dibromofluoromethane (Surr)	*104*		*75 - 128*		*07/12/19 18:49*	*1*
1,2-Dichloroethane-d4 (Surr)	*98*		*70 - 121*		*07/12/19 18:49*	*1*
Toluene-d8 (Surr)	*100*		*70 - 123*		*07/12/19 18:49*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Racer Moraine

Job ID: 240-115562-1

Client Sample ID: GM-15/070819/
Date Collected: 07/08/19 16:50
Date Received: 07/10/19 08:00

Lab Sample ID: 240-115562-3
Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	1.0	U	1.0	0.13	ug/L			07/12/19 19:13	1
cis-1,2-Dichloroethene	**9.4**		1.0	0.16	ug/L			07/12/19 19:13	1
1,1-Dichloroethane	**2.3**		1.0	0.17	ug/L			07/12/19 19:13	1
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L			07/12/19 19:13	1
Ethylbenzene	1.0	U	1.0	0.11	ug/L			07/12/19 19:13	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			07/12/19 19:13	1
Toluene	1.0	U	1.0	0.14	ug/L			07/12/19 19:13	1
trans-1,2-Dichloroethene	**0.68**	**J**	1.0	0.19	ug/L			07/12/19 19:13	1
1,1,1-Trichloroethane	1.0	U	1.0	0.24	ug/L			07/12/19 19:13	1
Trichloroethene	**5.7**		1.0	0.10	ug/L			07/12/19 19:13	1
Vinyl chloride	**0.68**	**J**	1.0	0.20	ug/L			07/12/19 19:13	1
Xylenes, Total	2.0	U	2.0	0.15	ug/L			07/12/19 19:13	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*85*		*59 - 120*		*07/12/19 19:13*	*1*
Dibromofluoromethane (Surr)	*101*		*75 - 128*		*07/12/19 19:13*	*1*
1,2-Dichloroethane-d4 (Surr)	*97*		*70 - 121*		*07/12/19 19:13*	*1*
Toluene-d8 (Surr)	*101*		*70 - 123*		*07/12/19 19:13*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Racer Moraine

Job ID: 240-115562-1

Client Sample ID: HR-17/070919/
Date Collected: 07/09/19 08:45
Date Received: 07/10/19 08:00

Lab Sample ID: 240-115562-4
Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	1.0	U	1.0	0.13	ug/L			07/12/19 23:11	1
cis-1,2-Dichloroethene	**1.2**		1.0	0.16	ug/L			07/12/19 23:11	1
1,1-Dichloroethane	**1.6**		1.0	0.17	ug/L			07/12/19 23:11	1
1,1-Dichloroethene	**0.54**	**J**	1.0	0.19	ug/L			07/12/19 23:11	1
Ethylbenzene	1.0	U	1.0	0.11	ug/L			07/12/19 23:11	1
Tetrachloroethene	**150**		10	1.5	ug/L			07/12/19 15:00	10
Toluene	1.0	U	1.0	0.14	ug/L			07/12/19 23:11	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			07/12/19 23:11	1
1,1,1-Trichloroethane	**7.4**		1.0	0.24	ug/L			07/12/19 23:11	1
Trichloroethene	**1.7**		1.0	0.10	ug/L			07/12/19 23:11	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			07/12/19 23:11	1
Xylenes, Total	2.0	U	2.0	0.15	ug/L			07/12/19 23:11	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*83*		*59 - 120*		*07/12/19 15:00*	*10*
4-Bromofluorobenzene (Surr)	*83*		*59 - 120*		*07/12/19 23:11*	*1*
Dibromofluoromethane (Surr)	*103*		*75 - 128*		*07/12/19 15:00*	*10*
Dibromofluoromethane (Surr)	*101*		*75 - 128*		*07/12/19 23:11*	*1*
1,2-Dichloroethane-d4 (Surr)	*103*		*70 - 121*		*07/12/19 15:00*	*10*
1,2-Dichloroethane-d4 (Surr)	*98*		*70 - 121*		*07/12/19 23:11*	*1*
Toluene-d8 (Surr)	*102*		*70 - 123*		*07/12/19 15:00*	*10*
Toluene-d8 (Surr)	*96*		*70 - 123*		*07/12/19 23:11*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Racer Moraine

Job ID: 240-115562-1

Client Sample ID: HR-16/070919/
Date Collected: 07/09/19 17:55
Date Received: 07/10/19 08:00

Lab Sample ID: 240-115562-5
Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	1.0	U	1.0	0.13	ug/L			07/12/19 19:37	1
cis-1,2-Dichloroethene	**0.62**	**J**	1.0	0.16	ug/L			07/12/19 19:37	1
1,1-Dichloroethane	**0.75**	**J**	1.0	0.17	ug/L			07/12/19 19:37	1
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L			07/12/19 19:37	1
Ethylbenzene	1.0	U	1.0	0.11	ug/L			07/12/19 19:37	1
Tetrachloroethene	**0.17**	**J**	1.0	0.15	ug/L			07/12/19 19:37	1
Toluene	1.0	U	1.0	0.14	ug/L			07/12/19 19:37	1
trans-1,2-Dichloroethene	**0.21**	**J**	1.0	0.19	ug/L			07/12/19 19:37	1
1,1,1-Trichloroethane	**0.36**	**J**	1.0	0.24	ug/L			07/12/19 19:37	1
Trichloroethene	**2.9**		1.0	0.10	ug/L			07/12/19 19:37	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			07/12/19 19:37	1
Xylenes, Total	2.0	U	2.0	0.15	ug/L			07/12/19 19:37	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*83*		*59 - 120*		*07/12/19 19:37*	*1*
Dibromofluoromethane (Surr)	*102*		*75 - 128*		*07/12/19 19:37*	*1*
1,2-Dichloroethane-d4 (Surr)	*101*		*70 - 121*		*07/12/19 19:37*	*1*
Toluene-d8 (Surr)	*103*		*70 - 123*		*07/12/19 19:37*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Racer Moraine

Job ID: 240-115562-1

Client Sample ID: EB-02/070819/
Date Collected: 07/08/19 00:00
Date Received: 07/10/19 08:00

Lab Sample ID: 240-115562-6
Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	1.0	U	1.0	0.13	ug/L			07/12/19 20:00	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.16	ug/L			07/12/19 20:00	1
1,1-Dichloroethane	1.0	U	1.0	0.17	ug/L			07/12/19 20:00	1
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L			07/12/19 20:00	1
Ethylbenzene	1.0	U	1.0	0.11	ug/L			07/12/19 20:00	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			07/12/19 20:00	1
Toluene	1.0	U	1.0	0.14	ug/L			07/12/19 20:00	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			07/12/19 20:00	1
1,1,1-Trichloroethane	1.0	U	1.0	0.24	ug/L			07/12/19 20:00	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			07/12/19 20:00	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			07/12/19 20:00	1
Xylenes, Total	2.0	U	2.0	0.15	ug/L			07/12/19 20:00	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*84*		*59 - 120*		*07/12/19 20:00*	*1*
Dibromofluoromethane (Surr)	*101*		*75 - 128*		*07/12/19 20:00*	*1*
1,2-Dichloroethane-d4 (Surr)	*100*		*70 - 121*		*07/12/19 20:00*	*1*
Toluene-d8 (Surr)	*102*		*70 - 123*		*07/12/19 20:00*	*1*

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Racer Moraine

Job ID: 240-115562-1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)			
		BFB	DBFM	DCA	TOL
Lab Sample ID	Client Sample ID	(59-120)	(75-128)	(70-121)	(70-123)
240-115562-1	GM-16/070819/	90	99	97	101
240-115562-2	RMW-102/070819/	84	104	98	100
240-115562-3	GM-15/070819/	85	101	97	101
240-115562-4	HR-17/070919/	83	101	98	96
240-115562-4	HR-17/070919/	83	103	103	102
240-115562-5	HR-16/070919/	83	102	101	103
240-115562-6	EB-02/070819/	84	101	100	102
LCS 240-390934/4	Lab Control Sample	104	93	86	109
MB 240-390934/7	Method Blank	83	101	99	103

Surrogate Legend

BFB = 4-Bromofluorobenzene (Surr)
DBFM = Dibromofluoromethane (Surr)
DCA = 1,2-Dichloroethane-d4 (Surr)
TOL = Toluene-d8 (Surr)

Method: 8260B - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-390934/7
Matrix: Water
Analysis Batch: 390934

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	1.0	U	1.0	0.13	ug/L			07/12/19 14:37	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.16	ug/L			07/12/19 14:37	1
1,1-Dichloroethane	1.0	U	1.0	0.17	ug/L			07/12/19 14:37	1
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L			07/12/19 14:37	1
Ethylbenzene	1.0	U	1.0	0.11	ug/L			07/12/19 14:37	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			07/12/19 14:37	1
Toluene	1.0	U	1.0	0.14	ug/L			07/12/19 14:37	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			07/12/19 14:37	1
1,1,1-Trichloroethane	1.0	U	1.0	0.24	ug/L			07/12/19 14:37	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			07/12/19 14:37	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			07/12/19 14:37	1
Xylenes, Total	2.0	U	2.0	0.15	ug/L			07/12/19 14:37	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*83*		*59 - 120*		*07/12/19 14:37*	*1*
Dibromofluoromethane (Surr)	*101*		*75 - 128*		*07/12/19 14:37*	*1*
1,2-Dichloroethane-d4 (Surr)	*99*		*70 - 121*		*07/12/19 14:37*	*1*
Toluene-d8 (Surr)	*103*		*70 - 123*		*07/12/19 14:37*	*1*

Lab Sample ID: LCS 240-390934/4
Matrix: Water
Analysis Batch: 390934

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Benzene	10.0	9.95		ug/L		100	80 - 123
cis-1,2-Dichloroethene	10.0	10.0		ug/L		100	76 - 128
1,1-Dichloroethane	10.0	9.73		ug/L		97	75 - 133
1,1-Dichloroethene	10.0	9.17		ug/L		92	65 - 139
Ethylbenzene	10.0	10.9		ug/L		109	80 - 120
m-Xylene & p-Xylene	10.0	11.1		ug/L		111	80 - 120
o-Xylene	10.0	11.4		ug/L		114	80 - 120
Tetrachloroethene	10.0	9.57		ug/L		96	74 - 130
Toluene	10.0	10.9		ug/L		109	78 - 129
trans-1,2-Dichloroethene	10.0	10.0		ug/L		100	78 - 133
1,1,1-Trichloroethane	10.0	9.63		ug/L		96	69 - 134
Trichloroethene	10.0	9.54		ug/L		95	76 - 125
Vinyl chloride	10.0	10.2		ug/L		102	58 - 143
Xylenes, Total	20.0	22.5		ug/L		113	80 - 120
Chloroethane	10.0	9.33		ug/L		93	33 - 173

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*104*		*59 - 120*
Dibromofluoromethane (Surr)	*93*		*75 - 128*
1,2-Dichloroethane-d4 (Surr)	*86*		*70 - 121*
Toluene-d8 (Surr)	*109*		*70 - 123*

QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Racer Moraine

Job ID: 240-115562-1

GC/MS VOA

Analysis Batch: 390934

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-115562-1	GM-16/070819/	Total/NA	Water	8260B	
240-115562-2	RMW-102/070819/	Total/NA	Water	8260B	
240-115562-3	GM-15/070819/	Total/NA	Water	8260B	
240-115562-4	HR-17/070919/	Total/NA	Water	8260B	
240-115562-4	HR-17/070919/	Total/NA	Water	8260B	
240-115562-5	HR-16/070919/	Total/NA	Water	8260B	
240-115562-6	EB-02/070819/	Total/NA	Water	8260B	
MB 240-390934/7	Method Blank	Total/NA	Water	8260B	
LCS 240-390934/4	Lab Control Sample	Total/NA	Water	8260B	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Racer Moraine

Job ID: 240-115562-1

Client Sample ID: GM-16/070819/ — Lab Sample ID: 240-115562-1

Date Collected: 07/08/19 13:30 — **Matrix: Water**
Date Received: 07/10/19 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	390934	07/12/19 18:25	LRW	TAL CAN

Client Sample ID: RMW-102/070819/ — Lab Sample ID: 240-115562-2

Date Collected: 07/08/19 15:10 — **Matrix: Water**
Date Received: 07/10/19 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	390934	07/12/19 18:49	LRW	TAL CAN

Client Sample ID: GM-15/070819/ — Lab Sample ID: 240-115562-3

Date Collected: 07/08/19 16:50 — **Matrix: Water**
Date Received: 07/10/19 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	390934	07/12/19 19:13	LRW	TAL CAN

Client Sample ID: HR-17/070919/ — Lab Sample ID: 240-115562-4

Date Collected: 07/09/19 08:45 — **Matrix: Water**
Date Received: 07/10/19 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		10	390934	07/12/19 15:00	LRW	TAL CAN
Total/NA	Analysis	8260B		1	390934	07/12/19 23:11	LRW	TAL CAN

Client Sample ID: HR-16/070919/ — Lab Sample ID: 240-115562-5

Date Collected: 07/09/19 17:55 — **Matrix: Water**
Date Received: 07/10/19 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	390934	07/12/19 19:37	LRW	TAL CAN

Client Sample ID: EB-02/070819/ — Lab Sample ID: 240-115562-6

Date Collected: 07/08/19 00:00 — **Matrix: Water**
Date Received: 07/10/19 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	390934	07/12/19 20:00	LRW	TAL CAN

Laboratory References:

TAL CAN = Eurofins TestAmerica, Canton, 4101 Shuffel Street NW, North Canton, OH 44720, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Racer Moraine

Job ID: 240-115562-1

Laboratory: Eurofins TestAmerica, Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
California	State		2927	02-23-20
California	State Program	9	2927	02-23-20
Connecticut	State Program	1	PH-0590	12-31-19
Florida	NELAP	4	E87225	06-30-20
Florida	NELAP		E87225	06-30-20
Illinois	NELAP	5	200004	07-31-19 *
Illinois	NELAP		004498	07-31-19
Iowa	State Program	7	421	06-01-21
Kansas	NELAP	7	E-10336	04-30-20
Kentucky (UST)	State Program	4	58	02-23-20
Kentucky (WW)	State Program	4	98016	12-31-19
Minnesota	NELAP	5	039-999-348	12-31-19 *
Minnesota (Petrofund)	State Program	1	3506	07-31-19 *
Nevada	State		OH00048	07-31-19
Nevada	State Program	9	OH00048	07-31-19
New Jersey	NELAP	2	OH001	06-30-20
New Jersey	NELAP		OH001	06-30-20
New York	NELAP	2	10975	03-31-20
New York	NELAP		10975	03-31-20
Ohio VAP	State Program	5	CL0024	06-05-21
Oregon	NELAP	10	4062	02-23-20
Oregon	NELAP		4062	02-23-20
Pennsylvania	NELAP	3	68-00340	08-31-19 *
Pennsylvania	NELAP		68-00340	08-31-19
Texas	NELAP	6	T104704517-18-10	08-31-19 *
Texas	NELAP		T104704517-18-10	08-31-19
USDA	Federal		P330-16-00404	12-28-19
Virginia	NELAP	3	460175	09-14-19 *
Virginia	NELAP		010101	09-14-19
Washington	State		C971	01-12-20
Washington	State Program	10	C971	01-12-20 *
West Virginia DEP	State		210	12-31-19
West Virginia DEP	State Program	3	210	12-31-19

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Eurofins TestAmerica, Canton
4101 Shuffel Street NW
North Canton, OH 44720
Phone: 330-497-9396 Fax: 330-497-0772

~~Columbus~~ 209

Chain of Custody Record

1.8/C1.9

eurofins | Environment Testing TestAmerica

Client Information	Sampler: Alex von Clausburg	Lab PM: DelMonico, Michael	Carrier Tracking No(s):	COC No: 240-62293-26457.1
Client Contact: Kari Eldridge	Phone: 614-634-0722	E-Mail: michael.delmonico@testamericainc.com		Page: Page 1 of 8
Company: ARCADIS U.S., Inc				Job #:

Address: 4665 Cornell Road Suite 200	Due Date Requested:
City: Cincinnati	TAT Requested (days):
State, Zip: OH, 45241	
Phone:	PO #: OH000294.2019.0004B
Email: kari.eldridge@arcadis-us.com	WO #: Project #: OH000294.2018.0004B
Project Name: Racer Moraine	Project #: 24006917
Site:	SSOW#:

Analysis Requested

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	8260B - (MOD) Custom Sublist	9060 - TOC	9251 - Local Method	300.0_28D - Sulfate	6010B - (MOD) Custom Sublist	SM4500_S2_F - (MOD) Local Method	6010B - Fe-Mn - FF	Total Number of containers	Special Instructions/Note:
			Preservation Code:				A	S	N	N	D	CB	D		
GM-16 / 070819 /	07/08/19	13:30	G	Water		3								3	
RMW-10L / 070819 /	07/08/19	15:10	G	Water		3								3	
GM-15 / 070819	07/08/19	16:50	G	Water		3								3	
TR-17 / 070919 /	07/09/19	08:45	G	Water		4								4	
TR-16 / 070919 /	07/09/19	11:55	G	Water		3								3	
				Water											
				Water											
				Water											
				Water											
				Water											
				Water											
				Water											

240-115562 Chain of Custody

210 Dayton

Preservation Codes:

A - HCL	M - Hexane
B - NaOH	N - None
C - Zn Acetate	O - AsNaO2
D - Nitric Acid	P - Na2O4S
E - NaHSO4	Q - Na2SO3
F - MeOH	R - Na2S2O3
G - Amchlor	S - H2SO4
H - Ascorbic Acid	T - TSP Dodecahydrate
I - Ice	U - Acetone
J - DI Water	V - MCAA
K - EDTA	W - pH 4-5
L - EDA	Z - other (specify)

Other:

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months

Deliverable Requested: I, II, III, IV, Other (specify)

Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

Relinquished by: Alex von Clausburg	Date/Time: 07/09/19 12:30	Company: Arcadis	Received by:	Date/Time: 7-9-19 14:00	Company: ETA
Relinquished by:	Date/Time: 7-9-19 14:10	Company: ETA	Received by:	Date/Time: 7-10-19 800	Company: TA
Relinquished by:	Date/Time:	Company:	Received by:	Date/Time:	Company:

Custody Seals Intact: Δ Yes Δ No | Custody Seal No.:

Cooler Temperature(s) °C and Other Remarks:

Ver: 01/16/2019

Eurofins TestAmerica, Canton
4101 Shuffel Street NW
North Canton, OH 44720
Phone: 330-497-9396 Fax: 330-497-0772

~~Columbus~~ 200

Chain of Custody Record

1.8/C1.9

eurofins Environment Testing TestAmerica

Client Information	Sampler: Alex van Clausburg	Lab PM: DelMonico, Michael	Carrier Tracking No(s):	COC No: 240-62293-26457.1
Client Contact: Kari Eldridge	Phone: 614-634-0722	E-Mail: michael.delmonico@testamericainc.com		Page: Page 1 of 8
Company: ARCADIS U.S., Inc				Job #:
Address: 4665 Cornell Road Suite 200	Due Date Requested:			
City: Cincinnati	TAT Requested (days):			
State, Zip: OH, 45241				
Phone:	PO #: OH000294.2019.0004B			
Email: kari.eldridge@arcadis-us.com	WO #: Project #: OH000294.2018.0004B			
Project Name: Racer Moraine	Project #: 24000917			
Site:	SSOW#:			

Analysis Requested

Preservation Codes:
A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA, M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - pH 4-5, Z - other (specify)
Other:

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (Water, Solid, Organic, Biota, Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	8260B - (MOD) Custom Sublist	9060 - TOC	9251 - Lead Method	300.0_28D - Sulfate	6010B - (MOD) Custom Sublist	SM4500_S2_F - (MOD) Lead Method	6010B - Fe-Mn - FF	Total Number of containers	Special Instructions/Note:
Preservation Code:							A	S	N	N	D	CB	D		
GM-16 / 07 0819 /	07/08/19	13:30	G	Water		3	X							3	
RMW-10L / 07 0819 /	07/08/19	15:10	G	Water		3	X							3	
GM-15 / 07 0819 /	07/08/19	16:50	G	Water		3	X							3	
TR-17 / 07 0919 /	07/09/19	08:45	G	Water		4	X							4	10x dilution
TR-16 / 07 0719 /	07/09/19	11:55	G	Water		3	X							3	
				Water											
				Water											
				Water											
				Water											
				Water											
				Water											

210
Dayton

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return To Client ☐ Disposal By Lab ☐ Archive For ____ Months

Deliverable Requested: I, II, III, IV, Other (specify)

Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date	Time:	Method of Shipment:

Relinquished by	Date/Time	Company	Received by	Date/Time	Company
Alex van Clausburg	07/09/19 12:30	Arcadis		7-9-19 14:00	EFA
Relinquished by	Date/Time	Company	Received by	Date/Time	Company
	7-9-19 14:10	EFA		7.10.19 800	TA
Relinquished by	Date/Time	Company	Received by	Date/Time	Company

Custody Seals Intact: ☐ Yes ☐ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks:

Ver: 01/16/2019

Eurofins TestAmerica Canton Sample Receipt Form/Narrative **Login # : 115562**
Canton Facility

Client Aecom Site Name _____ Cooler unpacked by: SC

Cooler Received on 7/10/19 Opened on 7/10/19

FedEx: 1st Grd Exp UPS FAS Clipper Client Drop Off TestAmerica Courier Other

Receipt After-hours: Drop-off Date/Time _____ Storage Location _____

TestAmerica Cooler # TA Foam Box Client Cooler Box Other _____

Packing material used: Bubble Wrap Foam Plastic Bag None Other _____

COOLANT: Wet Ice Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☐ See Multiple Cooler Form
   IR GUN# IR-8 (CF **+0.1** °C) Observed Cooler Temp. 1.8 °C Corrected Cooler Temp. 1.9 °C
   IR GUN #36 (CF **+0.6**°C) Observed Cooler Temp. _____ °C Corrected Cooler Temp. _____ °C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1	(Yes)	No
-Were the seals on the outside of the cooler(s) signed & dated?	(Yes)	No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes	(No)
-Were tamper/custody seals intact and uncompromised?	(Yes)	No NA
3. Shippers' packing slip attached to the cooler(s)?	Yes	(No)
4. Did custody papers accompany the sample(s)?	(Yes)	No
5. Were the custody papers relinquished & signed in the appropriate place?	(Yes)	No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	(Yes)	No
7. Did all bottles arrive in good condition (Unbroken)?	(Yes)	No
8. Could all bottle labels be reconciled with the COC?	(Yes)	No
9. Were correct bottle(s) used for the test(s) indicated?	(Yes)	No
10. Sufficient quantity received to perform indicated analyses?	(Yes)	No
11. Are these work share samples?	Yes	(No)
If yes, Questions 12-16 have been checked at the originating laboratory.		
12. Were all preserved sample(s) at the correct pH upon receipt?	Yes	No (NA) pH Strip Lot# HC984738
13. Were VOAs on the COC?	(Yes)	No
14. Were air bubbles >6 mm in any VOA vials? ● ⬅ Larger than this.	Yes	(No) NA
15. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # _____	Yes	(No)
16. Was a LL Hg or Me Hg trip blank present? _____	Yes	(No)

Tests that are not checked for pH by Receiving:

VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

17. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES

Samples processed by: RC

Received sample EB-02 / 070819 / not on chain w/ 1/4 leg st'd.

18. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.
Sample(s) _____ were received in a broken container.
Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

19. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.
Time preserved: _____ Preservative(s) added/Lot number(s): _____

VOA Sample Preservation - Date/Time VOAs Frozen: _____

WI-NC-099

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ANALYTICAL REPORT

Eurofins TestAmerica, Canton
4101 Shuffel Street NW
North Canton, OH 44720
Tel: (330)497-9396

Laboratory Job ID: 240-115564-1
Client Project/Site: Racer Moraine

For:
ARCADIS U.S., Inc.
100 E. Campus View Blvd
Suite 200
Columbus, Ohio 43235

Attn: Carolyn Grogan

Authorized for release by:
7/24/2019 3:10:43 PM

Michael DelMonico, Project Manager I
(330)497-9396
michael.delmonico@testamericainc.com

LINKS

Review your project results through TotalAccess

Have a Question? Ask The Expert

Visit us at: www.testamericainc.com

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Racer Moraine

Job ID: 240-115564-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Job ID: 240-115564-1

Laboratory: Eurofins TestAmerica, Canton

Narrative

CASE NARRATIVE

Client: ARCADIS U.S., Inc.

Project: Racer Moraine

Report Number: 240-115564-1

With the exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. In addition all laboratory quality control samples were within established control limits, with any exceptions noted below. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In some cases, due to interference or analytes present at high concentrations, samples were diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

Eurofins TestAmerica, Canton attests to the validity of the laboratory data generated by Eurofins TestAmerica facilities reported herein. All analyses performed by Eurofins TestAmerica facilities were done using established laboratory SOPs that incorporate QA/QC procedures described in the application methods. Eurofins TestAmerica's operations groups have reviewed the data for compliance with the laboratory QA/QC plan, and data have been found to be compliant with laboratory protocols unless otherwise noted below.

The test results in this report meet all NELAP requirements for parameters for which accreditation is required or available. Any exceptions to NELAP requirements are noted in this report. Pursuant to NELAP, this report may not be reproduced, except in full, without the written approval of the laboratory.

Calculations are performed before rounding to avoid round-off errors in calculated results.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

All solid sample results are reported on an "as received" basis unless otherwise indicated by the presence of a % solids value in the method header.

This laboratory report is confidential and is intended for the sole use of Eurofins TestAmerica and its client.

RECEIPT

The samples were received on 7/10/2019 8:00 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 1.9º C.

VOLATILE ORGANIC COMPOUNDS (GCMS)

Samples RMW-101/070819/ (240-115564-1), RMW-100/070819/ (240-115564-2) and EB-1/070919/ (240-115564-3) were analyzed for volatile organic compounds (GCMS) in accordance with EPA SW-846 Method 8260B. The samples were analyzed on 07/12/2019.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Racer Moraine

Job ID: 240-115564-1

Method	Method Description	Protocol	Laboratory
8260B	Volatile Organic Compounds (GC/MS)	SW846	TAL CAN
5030B	Purge and Trap	SW846	TAL CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL CAN = Eurofins TestAmerica, Canton, 4101 Shuffel Street NW, North Canton, OH 44720, TEL (330)497-9396

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Racer Moraine

Job ID: 240-115564-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
240-115564-1	RMW-101/070819/	Water	07/08/19 14:05	07/10/19 08:00	
240-115564-2	RMW-100/070819/	Water	07/08/19 16:15	07/10/19 08:00	
240-115564-3	EB-1/070919/	Water	07/09/19 08:00	07/10/19 08:00	

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Racer Moraine

Job ID: 240-115564-1

Client Sample ID: RMW-101/070819/ — Lab Sample ID: 240-115564-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Benzene	0.13	J	1.0	0.13	ug/L	1		8260B	Total/NA
cis-1,2-Dichloroethene	6.7		1.0	0.16	ug/L	1		8260B	Total/NA
1,1-Dichloroethane	1.3		1.0	0.17	ug/L	1		8260B	Total/NA
Tetrachloroethene	0.49	J	1.0	0.15	ug/L	1		8260B	Total/NA
trans-1,2-Dichloroethene	0.30	J	1.0	0.19	ug/L	1		8260B	Total/NA
Trichloroethene	1.9		1.0	0.10	ug/L	1		8260B	Total/NA
Vinyl chloride	0.61	J	1.0	0.20	ug/L	1		8260B	Total/NA

Client Sample ID: RMW-100/070819/ — Lab Sample ID: 240-115564-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	1.8		1.0	0.16	ug/L	1		8260B	Total/NA
1,1-Dichloroethane	0.82	J	1.0	0.17	ug/L	1		8260B	Total/NA
Vinyl chloride	0.50	J	1.0	0.20	ug/L	1		8260B	Total/NA

Client Sample ID: EB-1/070919/ — Lab Sample ID: 240-115564-3

No Detections.

This Detection Summary does not include radiochemical test results.

Client: ARCADIS U.S., Inc.
Project/Site: Racer Moraine

Job ID: 240-115564-1

Client Sample ID: RMW-101/070819/
Date Collected: 07/08/19 14:05
Date Received: 07/10/19 08:00

Lab Sample ID: 240-115564-1
Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	**0.13**	**J**	1.0	0.13	ug/L			07/12/19 20:24	1
cis-1,2-Dichloroethene	**6.7**		1.0	0.16	ug/L			07/12/19 20:24	1
1,1-Dichloroethane	**1.3**		1.0	0.17	ug/L			07/12/19 20:24	1
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L			07/12/19 20:24	1
Ethylbenzene	1.0	U	1.0	0.11	ug/L			07/12/19 20:24	1
Tetrachloroethene	**0.49**	**J**	1.0	0.15	ug/L			07/12/19 20:24	1
Toluene	1.0	U	1.0	0.14	ug/L			07/12/19 20:24	1
trans-1,2-Dichloroethene	**0.30**	**J**	1.0	0.19	ug/L			07/12/19 20:24	1
1,1,1-Trichloroethane	1.0	U	1.0	0.24	ug/L			07/12/19 20:24	1
Trichloroethene	**1.9**		1.0	0.10	ug/L			07/12/19 20:24	1
Vinyl chloride	**0.61**	**J**	1.0	0.20	ug/L			07/12/19 20:24	1
Xylenes, Total	2.0	U	2.0	0.15	ug/L			07/12/19 20:24	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*83*		*59 - 120*		*07/12/19 20:24*	*1*
Dibromofluoromethane (Surr)	*101*		*75 - 128*		*07/12/19 20:24*	*1*
1,2-Dichloroethane-d4 (Surr)	*96*		*70 - 121*		*07/12/19 20:24*	*1*
Toluene-d8 (Surr)	*100*		*70 - 123*		*07/12/19 20:24*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Racer Moraine

Job ID: 240-115564-1

Client Sample ID: RMW-100/070819/
Date Collected: 07/08/19 16:15
Date Received: 07/10/19 08:00

Lab Sample ID: 240-115564-2
Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	1.0	U	1.0	0.13	ug/L			07/12/19 20:48	1
cis-1,2-Dichloroethene	**1.8**		1.0	0.16	ug/L			07/12/19 20:48	1
1,1-Dichloroethane	**0.82**	**J**	1.0	0.17	ug/L			07/12/19 20:48	1
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L			07/12/19 20:48	1
Ethylbenzene	1.0	U	1.0	0.11	ug/L			07/12/19 20:48	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			07/12/19 20:48	1
Toluene	1.0	U	1.0	0.14	ug/L			07/12/19 20:48	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			07/12/19 20:48	1
1,1,1-Trichloroethane	1.0	U	1.0	0.24	ug/L			07/12/19 20:48	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			07/12/19 20:48	1
Vinyl chloride	**0.50**	**J**	1.0	0.20	ug/L			07/12/19 20:48	1
Xylenes, Total	2.0	U	2.0	0.15	ug/L			07/12/19 20:48	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*82*		*59 - 120*		*07/12/19 20:48*	*1*
Dibromofluoromethane (Surr)	*103*		*75 - 128*		*07/12/19 20:48*	*1*
1,2-Dichloroethane-d4 (Surr)	*98*		*70 - 121*		*07/12/19 20:48*	*1*
Toluene-d8 (Surr)	*99*		*70 - 123*		*07/12/19 20:48*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Racer Moraine

Job ID: 240-115564-1

Client Sample ID: EB-1/070919/
Date Collected: 07/09/19 08:00
Date Received: 07/10/19 08:00

Lab Sample ID: 240-115564-3
Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	1.0	U	1.0	0.13	ug/L			07/12/19 21:12	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.16	ug/L			07/12/19 21:12	1
1,1-Dichloroethane	1.0	U	1.0	0.17	ug/L			07/12/19 21:12	1
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L			07/12/19 21:12	1
Ethylbenzene	1.0	U	1.0	0.11	ug/L			07/12/19 21:12	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			07/12/19 21:12	1
Toluene	1.0	U	1.0	0.14	ug/L			07/12/19 21:12	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			07/12/19 21:12	1
1,1,1-Trichloroethane	1.0	U	1.0	0.24	ug/L			07/12/19 21:12	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			07/12/19 21:12	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			07/12/19 21:12	1
Xylenes, Total	2.0	U	2.0	0.15	ug/L			07/12/19 21:12	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*79*		*59 - 120*		*07/12/19 21:12*	*1*
Dibromofluoromethane (Surr)	*99*		*75 - 128*		*07/12/19 21:12*	*1*
1,2-Dichloroethane-d4 (Surr)	*98*		*70 - 121*		*07/12/19 21:12*	*1*
Toluene-d8 (Surr)	*100*		*70 - 123*		*07/12/19 21:12*	*1*

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Racer Moraine

Job ID: 240-115564-1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)			
		BFB	DBFM	DCA	TOL
Lab Sample ID	Client Sample ID	(59-120)	(75-128)	(70-121)	(70-123)
240-115564-1	RMW-101/070819/	83	101	96	100
240-115564-2	RMW-100/070819/	82	103	98	99
240-115564-3	EB-1/070919/	79	99	98	100
LCS 240-390934/4	Lab Control Sample	104	93	86	109
MB 240-390934/7	Method Blank	83	101	99	103

Surrogate Legend

BFB = 4-Bromofluorobenzene (Surr)
DBFM = Dibromofluoromethane (Surr)
DCA = 1,2-Dichloroethane-d4 (Surr)
TOL = Toluene-d8 (Surr)

Method: 8260B - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-390934/7
Matrix: Water
Analysis Batch: 390934

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	1.0	U	1.0	0.13	ug/L			07/12/19 14:37	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.16	ug/L			07/12/19 14:37	1
1,1-Dichloroethane	1.0	U	1.0	0.17	ug/L			07/12/19 14:37	1
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L			07/12/19 14:37	1
Ethylbenzene	1.0	U	1.0	0.11	ug/L			07/12/19 14:37	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			07/12/19 14:37	1
Toluene	1.0	U	1.0	0.14	ug/L			07/12/19 14:37	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			07/12/19 14:37	1
1,1,1-Trichloroethane	1.0	U	1.0	0.24	ug/L			07/12/19 14:37	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			07/12/19 14:37	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			07/12/19 14:37	1
Xylenes, Total	2.0	U	2.0	0.15	ug/L			07/12/19 14:37	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*83*		*59 - 120*		*07/12/19 14:37*	*1*
Dibromofluoromethane (Surr)	*101*		*75 - 128*		*07/12/19 14:37*	*1*
1,2-Dichloroethane-d4 (Surr)	*99*		*70 - 121*		*07/12/19 14:37*	*1*
Toluene-d8 (Surr)	*103*		*70 - 123*		*07/12/19 14:37*	*1*

Lab Sample ID: LCS 240-390934/4
Matrix: Water
Analysis Batch: 390934

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Benzene	10.0	9.95		ug/L		100	80 - 123
cis-1,2-Dichloroethene	10.0	10.0		ug/L		100	76 - 128
1,1-Dichloroethane	10.0	9.73		ug/L		97	75 - 133
1,1-Dichloroethene	10.0	9.17		ug/L		92	65 - 139
Ethylbenzene	10.0	10.9		ug/L		109	80 - 120
m-Xylene & p-Xylene	10.0	11.1		ug/L		111	80 - 120
o-Xylene	10.0	11.4		ug/L		114	80 - 120
Tetrachloroethene	10.0	9.57		ug/L		96	74 - 130
Toluene	10.0	10.9		ug/L		109	78 - 129
trans-1,2-Dichloroethene	10.0	10.0		ug/L		100	78 - 133
1,1,1-Trichloroethane	10.0	9.63		ug/L		96	69 - 134
Trichloroethene	10.0	9.54		ug/L		95	76 - 125
Vinyl chloride	10.0	10.2		ug/L		102	58 - 143
Xylenes, Total	20.0	22.5		ug/L		113	80 - 120
Chloroethane	10.0	9.33		ug/L		93	33 - 173

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*104*		*59 - 120*
Dibromofluoromethane (Surr)	*93*		*75 - 128*
1,2-Dichloroethane-d4 (Surr)	*86*		*70 - 121*
Toluene-d8 (Surr)	*109*		*70 - 123*

QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Racer Moraine

Job ID: 240-115564-1

GC/MS VOA

Analysis Batch: 390934

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-115564-1	RMW-101/070819/	Total/NA	Water	8260B	
240-115564-2	RMW-100/070819/	Total/NA	Water	8260B	
240-115564-3	EB-1/070919/	Total/NA	Water	8260B	
MB 240-390934/7	Method Blank	Total/NA	Water	8260B	
LCS 240-390934/4	Lab Control Sample	Total/NA	Water	8260B	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Racer Moraine

Job ID: 240-115564-1

Client Sample ID: RMW-101/070819/ — Lab Sample ID: 240-115564-1

Date Collected: 07/08/19 14:05 — **Matrix: Water**
Date Received: 07/10/19 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	390934	07/12/19 20:24	LRW	TAL CAN

Client Sample ID: RMW-100/070819/ — Lab Sample ID: 240-115564-2

Date Collected: 07/08/19 16:15 — **Matrix: Water**
Date Received: 07/10/19 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	390934	07/12/19 20:48	LRW	TAL CAN

Client Sample ID: EB-1/070919/ — Lab Sample ID: 240-115564-3

Date Collected: 07/09/19 08:00 — **Matrix: Water**
Date Received: 07/10/19 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	390934	07/12/19 21:12	LRW	TAL CAN

Laboratory References:

TAL CAN = Eurofins TestAmerica, Canton, 4101 Shuffel Street NW, North Canton, OH 44720, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Racer Moraine

Job ID: 240-115564-1

Laboratory: Eurofins TestAmerica, Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
California	State		2927	02-23-20
California	State Program	9	2927	02-23-20
Connecticut	State Program	1	PH-0590	12-31-19
Florida	NELAP	4	E87225	06-30-20
Florida	NELAP		E87225	06-30-20
Illinois	NELAP	5	200004	07-31-19 *
Illinois	NELAP		004498	07-31-19
Iowa	State Program	7	421	06-01-21
Kansas	NELAP	7	E-10336	04-30-20
Kentucky (UST)	State Program	4	58	02-23-20
Kentucky (WW)	State Program	4	98016	12-31-19
Minnesota	NELAP	5	039-999-348	12-31-19 *
Minnesota (Petrofund)	State Program	1	3506	07-31-19 *
Nevada	State		OH00048	07-31-19
Nevada	State Program	9	OH00048	07-31-19
New Jersey	NELAP	2	OH001	06-30-20
New Jersey	NELAP		OH001	06-30-20
New York	NELAP	2	10975	03-31-20
New York	NELAP		10975	03-31-20
Ohio VAP	State Program	5	CL0024	06-05-21
Oregon	NELAP	10	4062	02-23-20
Oregon	NELAP		4062	02-23-20
Pennsylvania	NELAP	3	68-00340	08-31-19 *
Pennsylvania	NELAP		68-00340	08-31-19
Texas	NELAP	6	T104704517-18-10	08-31-19 *
Texas	NELAP		T104704517-18-10	08-31-19
USDA	Federal		P330-16-00404	12-28-19
Virginia	NELAP	3	460175	09-14-19 *
Virginia	NELAP		010101	09-14-19
Washington	State		C971	01-12-20
Washington	State Program	10	C971	01-12-20 *
West Virginia DEP	State		210	12-31-19
West Virginia DEP	State Program	3	210	12-31-19

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Eurofins TestAmerica, Canton
4101 Shuffel Street NW
North Canton, OH 44720
Phone: 330-497-9396 Fax: 330-497-0772

~~Columbus~~
~~209~~

Chain of Custody Record

1.8 / C1.9

eurofins Environment Testing TestAmerica

Client Information	Sampler: JCLARK	Lab PM: DelMonico, Michael	Carrier Tracking No(s):	COC No: 240-62293-26457.3
Client Contact: Kari Eldridge	Phone: 6149402210	E-Mail: michael.delmonico@testamericainc.com		Page: Page 3 of 8
Company: ARCADIS U.S., Inc				Job #:
Address: 4665 Cornell Road Suite 200	Due Date Requested:			
City: Cincinnati	TAT Requested (days):			
State, Zip: OH, 45241				
Phone:	PO #: OH000294.2019.0004B			
Email: kari.eldridge@arcadis-us.com	WO #: Project #: OH000294.2018.0004B			
Project Name: Racer Moraine	Project #: 24006917			
Site:	SSOW#:			

Analysis Requested

Preservation Codes:

A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA, M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - pH 4-5, Z - other (specify)

Other:

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	8260B - (MOD) Custom Sublist	9060 - TOC	9251 - Local Method	300.0_28D - Sulfate	6010B - (MOD) Custom Sublist	SM4500_S2_F - (MOD) Local Method	6010B - Fe-Mn - FF	Total Number of containers	Special Instructions/Note:
			Preservation Code:				A	S	N	N	D	CB	D		
RMW-101/070819/		1405	G	Water			3							3	
RMW-100/070819/		1615	G	Water			3							3	
EB-1/070919/		0800	G	Water			3							3	
				Water											
				Water											
				Water											
				Water											

210
Dayton

240-115564 Chain of Custody

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months

Deliverable Requested: I, II, III, IV, Other (specify)

Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

	Relinquished by	Date/Time	Company	Received by	Date/Time	Company
1	[signature] ARCADIS	070919 1130	ARCADIS	[signature]	7-9-19 14:00	EA
2	[signature]	7-9-19 14:10	EA	[signature]	7/10/19 800	TA
3						

Custody Seals Intact: Δ Yes Δ No | Custody Seal No.:

Cooler Temperature(s) °C and Other Remarks:

Ver: 01/16/2019

Page 16 of 17

7/24/2019

Eurofins TestAmerica Canton Sample Receipt Form/Narrative **Login # : 1155564**
Canton Facility

Client Accutis Site Name _____ Cooler unpacked by: SC

Cooler Received on 7/10/19 Opened on 7/10/19

FedEx: 1st Grd Exp UPS FAS (Clipper) Client Drop Off TestAmerica Courier Other

Receipt After-hours: Drop-off Date/Time _____ Storage Location _____

TestAmerica Cooler # TA Foam Box Client Cooler Box Other _____

Packing material used: (Bubble Wrap) Foam (Plastic Bag) None Other _____

COOLANT: (Wet Ice) Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☐ See Multiple Cooler Form
   IR GUN# IR-8 (CF +0.1 °C) Observed Cooler Temp. 1.8 °C Corrected Cooler Temp. 1.9 °C
   IR GUN #36 (CF +0.6°C) Observed Cooler Temp. _____ °C Corrected Cooler Temp. _____ °C
2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1 (Yes) No
   -Were the seals on the outside of the cooler(s) signed & dated? (Yes) No NA
   -Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)? Yes (No)
   -Were tamper/custody seals intact and uncompromised? (Yes) No NA
3. Shippers' packing slip attached to the cooler(s)? Yes (No)
4. Did custody papers accompany the sample(s)? (Yes) No
5. Were the custody papers relinquished & signed in the appropriate place? (Yes) No
6. Was/were the person(s) who collected the samples clearly identified on the COC? (Yes) No
7. Did all bottles arrive in good condition (Unbroken)? (Yes) No
8. Could all bottle labels be reconciled with the COC? (Yes) No
9. Were correct bottle(s) used for the test(s) indicated? (Yes) No
10. Sufficient quantity received to perform indicated analyses? (Yes) No
11. Are these work share samples? Yes (No)
    If yes, Questions 12-16 have been checked at the originating laboratory.
12. Were all preserved sample(s) at the correct pH upon receipt? Yes No (NA) pH Strip Lot# HC984738
13. Were VOAs on the COC? (Yes) No
14. Were air bubbles >6 mm in any VOA vials? ● ⬅ Larger than this. Yes (No) NA
15. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # _____ Yes (No)
16. Was a LL Hg or Me Hg trip blank present? _____ Yes (No)

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

17. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES

Samples processed by: RC

18. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.
Sample(s) _____ were received in a broken container.
Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

19. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.
Time preserved: _____ Preservative(s) added/Lot number(s): _____

VOA Sample Preservation - Date/Time VOAs Frozen: _____

WI-NC-099

eurofins | Environment Testing TestAmerica

ANALYTICAL REPORT

Eurofins TestAmerica, Canton
4101 Shuffel Street NW
North Canton, OH 44720
Tel: (330)497-9396

Laboratory Job ID: 240-115711-1
Client Project/Site: Racer Moraine

For:
ARCADIS U.S., Inc.
100 E. Campus View Blvd
Suite 200
Columbus, Ohio 43235

Attn: Carolyn Grogan

Authorized for release by:
7/26/2019 3:20:58 PM

Michael DelMonico, Project Manager I
(330)497-9396
michael.delmonico@testamericainc.com

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

LINKS
Review your project results through TotalAccess
Have a Question? Ask The Expert
Visit us at: www.testamericainc.com

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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Racer Moraine

Job ID: 240-115711-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Job ID: 240-115711-1

Laboratory: Eurofins TestAmerica, Canton

Narrative

CASE NARRATIVE

Client: ARCADIS U.S., Inc.

Project: Racer Moraine

Report Number: 240-115711-1

With the exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. In addition all laboratory quality control samples were within established control limits, with any exceptions noted below. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In some cases, due to interference or analytes present at high concentrations, samples were diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

Eurofins TestAmerica, Canton attests to the validity of the laboratory data generated by Eurofins TestAmerica facilities reported herein. All analyses performed by Eurofins TestAmerica facilities were done using established laboratory SOPs that incorporate QA/QC procedures described in the application methods. Eurofins TestAmerica's operations groups have reviewed the data for compliance with the laboratory QA/QC plan, and data have been found to be compliant with laboratory protocols unless otherwise noted below.

The test results in this report meet all NELAP requirements for parameters for which accreditation is required or available. Any exceptions to NELAP requirements are noted in this report. Pursuant to NELAP, this report may not be reproduced, except in full, without the written approval of the laboratory.

Calculations are performed before rounding to avoid round-off errors in calculated results.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

All solid sample results are reported on an "as received" basis unless otherwise indicated by the presence of a % solids value in the method header.

This laboratory report is confidential and is intended for the sole use of Eurofins TestAmerica and its client.

RECEIPT

The samples were received on 7/12/2019 8:00 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 1.9º C.

VOLATILE ORGANIC COMPOUNDS (GCMS)

Samples W-4-S/070919/ (240-115711-1), W-3-S/070919/ (240-115711-2), W-2-S/070919/ (240-115711-3), GM-50/071019/ (240-115711-4), GM-47/071019/ (240-115711-5), GM-51/071019/ (240-115711-6), GM-49/071019/ (240-115711-7), GM-52/071019/ (240-115711-8), GM-48/071019/ (240-115711-9), EB-2/071019/ (240-115711-10), HR-4/070919/ (240-115711-11), W-2-N/070919/ (240-115711-12), W-3-N/070919/ (240-115711-13), W-4-N/070919/ (240-115711-14), EB-1/071019/ (240-115711-15), GM-63/071019/ (240-115711-16), GM-64/071019/ (240-115711-17), RMW-98/071019/ (240-115711-18), RMW-99/071019/ (240-115711-19), WSV-23/071019/ (240-115711-20), DUP-1/070919/ (240-115711-21), TRIP BLANK (240-115711-22) and EB-1/071119/ (240-115711-23) were analyzed for volatile organic compounds (GCMS) in accordance with EPA SW-846 Method 8260B. The samples were analyzed on 07/16/2019, 07/17/2019, 07/18/2019, 07/19/2019 and 07/23/2019.

Samples W-4-S/070919/ (240-115711-1)[3.33X], W-3-S/070919/ (240-115711-2)[5X], GM-51/071019/ (240-115711-6)[2X], GM-64/071019/ (240-115711-17)[1.67X], RMW-98/071019/ (240-115711-18)[1.67X] and RMW-99/071019/ (240-115711-19)[1.67X] required dilution prior to analysis. The reporting limits have been adjusted accordingly.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Racer Moraine

Job ID: 240-115711-1

Method	Method Description	Protocol	Laboratory
8260B	Volatile Organic Compounds (GC/MS)	SW846	TAL CAN
5030B	Purge and Trap	SW846	TAL CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL CAN = Eurofins TestAmerica, Canton, 4101 Shuffel Street NW, North Canton, OH 44720, TEL (330)497-9396

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Racer Moraine

Job ID: 240-115711-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
240-115711-1	W-4-S/070919/	Water	07/09/19 13:40	07/12/19 08:00	
240-115711-2	W-3-S/070919/	Water	07/09/19 15:20	07/12/19 08:00	
240-115711-3	W-2-S/070919/	Water	07/09/19 16:30	07/12/19 08:00	
240-115711-4	GM-50/071019/	Water	07/10/19 08:30	07/12/19 08:00	
240-115711-5	GM-47/071019/	Water	07/10/19 09:35	07/12/19 08:00	
240-115711-6	GM-51/071019/	Water	07/10/19 11:55	07/12/19 08:00	
240-115711-7	GM-49/071019/	Water	07/10/19 14:50	07/12/19 08:00	
240-115711-8	GM-52/071019/	Water	07/10/19 16:00	07/12/19 08:00	
240-115711-9	GM-48/071019/	Water	07/10/19 12:55	07/12/19 08:00	
240-115711-10	EB-2/071019/	Water	07/10/19 17:00	07/12/19 08:00	
240-115711-11	HR-4/070919/	Water	07/09/19 13:35	07/12/19 08:00	
240-115711-12	W-2-N/070919/	Water	07/09/19 15:50	07/12/19 08:00	
240-115711-13	W-3-N/070919/	Water	07/09/19 20:35	07/12/19 08:00	
240-115711-14	W-4-N/070919/	Water	07/09/19 18:15	07/12/19 08:00	
240-115711-15	EB-1/071019/	Water	07/10/19 07:30	07/12/19 08:00	
240-115711-16	GM-63/071019/	Water	07/10/19 11:50	07/12/19 08:00	
240-115711-17	GM-64/071019/	Water	07/10/19 09:25	07/12/19 08:00	
240-115711-18	RMW-98/071019/	Water	07/10/19 18:40	07/12/19 08:00	
240-115711-19	RMW-99/071019/	Water	07/10/19 17:05	07/12/19 08:00	
240-115711-20	WSV-23/071019/	Water	07/10/19 14:20	07/12/19 08:00	
240-115711-21	DUP-1/070919/	Water	07/09/19 00:00	07/12/19 08:00	
240-115711-22	TRIP BLANK	Water	07/11/19 08:20	07/12/19 08:00	
240-115711-23	EB-1/071119/	Water	07/11/19 08:20	07/12/19 08:00	

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Racer Moraine

Job ID: 240-115711-1

Client Sample ID: W-4-S/070919/ — Lab Sample ID: 240-115711-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	13		1.0	0.16	ug/L	1		8260B	Total/NA
1,1-Dichloroethane	1.6		1.0	0.17	ug/L	1		8260B	Total/NA
Tetrachloroethene	70		3.3	0.50	ug/L	3.33		8260B	Total/NA
trans-1,2-Dichloroethene	1.2		1.0	0.19	ug/L	1		8260B	Total/NA
1,1,1-Trichloroethane	1.7		1.0	0.24	ug/L	1		8260B	Total/NA
Trichloroethene	33		1.0	0.10	ug/L	1		8260B	Total/NA

Client Sample ID: W-3-S/070919/ — Lab Sample ID: 240-115711-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	1.1		1.0	0.16	ug/L	1		8260B	Total/NA
1,1-Dichloroethane	0.83	J	1.0	0.17	ug/L	1		8260B	Total/NA
Tetrachloroethene	81		5.0	0.75	ug/L	5		8260B	Total/NA
1,1,1-Trichloroethane	2.5		1.0	0.24	ug/L	1		8260B	Total/NA
Trichloroethene	5.6		1.0	0.10	ug/L	1		8260B	Total/NA

Client Sample ID: W-2-S/070919/ — Lab Sample ID: 240-115711-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	0.29	J	1.0	0.16	ug/L	1		8260B	Total/NA
1,1-Dichloroethane	0.23	J	1.0	0.17	ug/L	1		8260B	Total/NA
Tetrachloroethene	20		1.0	0.15	ug/L	1		8260B	Total/NA
1,1,1-Trichloroethane	0.60	J	1.0	0.24	ug/L	1		8260B	Total/NA
Trichloroethene	2.8		1.0	0.10	ug/L	1		8260B	Total/NA

Client Sample ID: GM-50/071019/ — Lab Sample ID: 240-115711-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	7.4		1.0	0.16	ug/L	1		8260B	Total/NA
1,1-Dichloroethane	7.4		1.0	0.17	ug/L	1		8260B	Total/NA
Tetrachloroethene	2.2		1.0	0.15	ug/L	1		8260B	Total/NA
trans-1,2-Dichloroethene	0.20	J	1.0	0.19	ug/L	1		8260B	Total/NA
Trichloroethene	0.39	J	1.0	0.10	ug/L	1		8260B	Total/NA
Vinyl chloride	1.8		1.0	0.20	ug/L	1		8260B	Total/NA

Client Sample ID: GM-47/071019/ — Lab Sample ID: 240-115711-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	29		1.0	0.16	ug/L	1		8260B	Total/NA
1,1-Dichloroethane	5.2		1.0	0.17	ug/L	1		8260B	Total/NA
Tetrachloroethene	40		1.0	0.15	ug/L	1		8260B	Total/NA
trans-1,2-Dichloroethene	0.81	J	1.0	0.19	ug/L	1		8260B	Total/NA
Trichloroethene	9.3		1.0	0.10	ug/L	1		8260B	Total/NA
Vinyl chloride	0.60	J	1.0	0.20	ug/L	1		8260B	Total/NA

Client Sample ID: GM-51/071019/ — Lab Sample ID: 240-115711-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	6.1		1.0	0.16	ug/L	1		8260B	Total/NA
1,1-Dichloroethane	1.9		1.0	0.17	ug/L	1		8260B	Total/NA
Tetrachloroethene	44		2.0	0.30	ug/L	2		8260B	Total/NA
trans-1,2-Dichloroethene	0.22	J	1.0	0.19	ug/L	1		8260B	Total/NA
Trichloroethene	5.0		1.0	0.10	ug/L	1		8260B	Total/NA

This Detection Summary does not include radiochemical test results.

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Racer Moraine

Job ID: 240-115711-1

Client Sample ID: GM-49/071019/ — Lab Sample ID: 240-115711-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,1-Dichloroethane	0.21	J	1.0	0.17	ug/L	1		8260B	Total/NA
Tetrachloroethene	1.2		1.0	0.15	ug/L	1		8260B	Total/NA
Trichloroethene	2.4		1.0	0.10	ug/L	1		8260B	Total/NA

Client Sample ID: GM-52/071019/ — Lab Sample ID: 240-115711-8

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Tetrachloroethene	15		1.0	0.15	ug/L	1		8260B	Total/NA
Trichloroethene	0.83	J	1.0	0.10	ug/L	1		8260B	Total/NA

Client Sample ID: GM-48/071019/ — Lab Sample ID: 240-115711-9

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	0.89	J	1.0	0.16	ug/L	1		8260B	Total/NA
1,1-Dichloroethane	0.19	J	1.0	0.17	ug/L	1		8260B	Total/NA
Tetrachloroethene	28		1.0	0.15	ug/L	1		8260B	Total/NA
Trichloroethene	1.3		1.0	0.10	ug/L	1		8260B	Total/NA

Client Sample ID: EB-2/071019/ — Lab Sample ID: 240-115711-10

No Detections.

Client Sample ID: HR-4/070919/ — Lab Sample ID: 240-115711-11

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	0.56	J	1.0	0.16	ug/L	1		8260B	Total/NA
1,1-Dichloroethane	1.7		1.0	0.17	ug/L	1		8260B	Total/NA
1,1-Dichloroethene	0.19	J	1.0	0.19	ug/L	1		8260B	Total/NA
Tetrachloroethene	0.22	J	1.0	0.15	ug/L	1		8260B	Total/NA
1,1,1-Trichloroethane	2.2		1.0	0.24	ug/L	1		8260B	Total/NA
Trichloroethene	0.29	J	1.0	0.10	ug/L	1		8260B	Total/NA

Client Sample ID: W-2-N/070919/ — Lab Sample ID: 240-115711-12

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	1.8		1.0	0.16	ug/L	1		8260B	Total/NA
1,1-Dichloroethane	0.19	J	1.0	0.17	ug/L	1		8260B	Total/NA
trans-1,2-Dichloroethene	0.22	J	1.0	0.19	ug/L	1		8260B	Total/NA
Trichloroethene	1.1		1.0	0.10	ug/L	1		8260B	Total/NA

Client Sample ID: W-3-N/070919/ — Lab Sample ID: 240-115711-13

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	14		1.0	0.16	ug/L	1		8260B	Total/NA
trans-1,2-Dichloroethene	0.23	J	1.0	0.19	ug/L	1		8260B	Total/NA
Vinyl chloride	0.81	J	1.0	0.20	ug/L	1		8260B	Total/NA

Client Sample ID: W-4-N/070919/ — Lab Sample ID: 240-115711-14

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	6.6		1.0	0.16	ug/L	1		8260B	Total/NA
1,1-Dichloroethane	7.6		1.0	0.17	ug/L	1		8260B	Total/NA
Tetrachloroethene	0.72	J	1.0	0.15	ug/L	1		8260B	Total/NA
trans-1,2-Dichloroethene	0.88	J	1.0	0.19	ug/L	1		8260B	Total/NA
Trichloroethene	9.2		1.0	0.10	ug/L	1		8260B	Total/NA

This Detection Summary does not include radiochemical test results.

Eurofins TestAmerica, Canton

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Racer Moraine

Job ID: 240-115711-1

Client Sample ID: EB-1/071019/ — Lab Sample ID: 240-115711-15

No Detections.

Client Sample ID: GM-63/071019/ — Lab Sample ID: 240-115711-16

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	2.6		1.0	0.16	ug/L	1		8260B	Total/NA
1,1-Dichloroethane	1.6		1.0	0.17	ug/L	1		8260B	Total/NA
Tetrachloroethene	12		1.0	0.15	ug/L	1		8260B	Total/NA
Trichloroethene	3.7		1.0	0.10	ug/L	1		8260B	Total/NA
Vinyl chloride	0.31	J	1.0	0.20	ug/L	1		8260B	Total/NA

Client Sample ID: GM-64/071019/ — Lab Sample ID: 240-115711-17

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	40		1.7	0.27	ug/L	1.67		8260B	Total/NA
1,1-Dichloroethane	2.5		1.0	0.17	ug/L	1		8260B	Total/NA
Tetrachloroethene	15		1.0	0.15	ug/L	1		8260B	Total/NA
trans-1,2-Dichloroethene	0.87	J	1.0	0.19	ug/L	1		8260B	Total/NA
1,1,1-Trichloroethane	0.65	J	1.0	0.24	ug/L	1		8260B	Total/NA
Trichloroethene	31		1.0	0.10	ug/L	1		8260B	Total/NA
Vinyl chloride	1.3		1.0	0.20	ug/L	1		8260B	Total/NA

Client Sample ID: RMW-98/071019/ — Lab Sample ID: 240-115711-18

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	6.8		1.0	0.16	ug/L	1		8260B	Total/NA
1,1-Dichloroethane	1.6		1.0	0.17	ug/L	1		8260B	Total/NA
Tetrachloroethene	35		1.7	0.25	ug/L	1.67		8260B	Total/NA
trans-1,2-Dichloroethene	0.29	J	1.0	0.19	ug/L	1		8260B	Total/NA
1,1,1-Trichloroethane	1.2		1.0	0.24	ug/L	1		8260B	Total/NA
Trichloroethene	8.5		1.0	0.10	ug/L	1		8260B	Total/NA
Vinyl chloride	0.27	J	1.0	0.20	ug/L	1		8260B	Total/NA

Client Sample ID: RMW-99/071019/ — Lab Sample ID: 240-115711-19

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	2.9		1.0	0.16	ug/L	1		8260B	Total/NA
1,1-Dichloroethane	2.1		1.0	0.17	ug/L	1		8260B	Total/NA
Tetrachloroethene	35		1.7	0.25	ug/L	1.67		8260B	Total/NA
1,1,1-Trichloroethane	0.77	J	1.0	0.24	ug/L	1		8260B	Total/NA
Trichloroethene	2.3		1.0	0.10	ug/L	1		8260B	Total/NA
Vinyl chloride	0.26	J	1.0	0.20	ug/L	1		8260B	Total/NA

Client Sample ID: WSV-23/071019/ — Lab Sample ID: 240-115711-20

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	0.77	J	1.0	0.16	ug/L	1		8260B	Total/NA
1,1-Dichloroethane	0.86	J	1.0	0.17	ug/L	1		8260B	Total/NA
Tetrachloroethene	28		1.0	0.15	ug/L	1		8260B	Total/NA
1,1,1-Trichloroethane	1.7		1.0	0.24	ug/L	1		8260B	Total/NA
Trichloroethene	3.7		1.0	0.10	ug/L	1		8260B	Total/NA

This Detection Summary does not include radiochemical test results.

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Racer Moraine

Job ID: 240-115711-1

Client Sample ID: DUP-1/070919/ — Lab Sample ID: 240-115711-21

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	0.62	J	1.0	0.16	ug/L	1		8260B	Total/NA
1,1-Dichloroethane	1.8		1.0	0.17	ug/L	1		8260B	Total/NA
Tetrachloroethene	0.26	J	1.0	0.15	ug/L	1		8260B	Total/NA
1,1,1-Trichloroethane	2.3		1.0	0.24	ug/L	1		8260B	Total/NA
Trichloroethene	0.40	J	1.0	0.10	ug/L	1		8260B	Total/NA

Client Sample ID: TRIP BLANK — Lab Sample ID: 240-115711-22

No Detections.

Client Sample ID: EB-1/071119/ — Lab Sample ID: 240-115711-23

No Detections.

This Detection Summary does not include radiochemical test results.

Client: ARCADIS U.S., Inc.
Project/Site: Racer Moraine

Job ID: 240-115711-1

Client Sample ID: W-4-S/070919/
Date Collected: 07/09/19 13:40
Date Received: 07/12/19 08:00

Lab Sample ID: 240-115711-1
Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	1.0	U	1.0	0.13	ug/L			07/16/19 18:51	1
cis-1,2-Dichloroethene	**13**		1.0	0.16	ug/L			07/16/19 18:51	1
1,1-Dichloroethane	**1.6**		1.0	0.17	ug/L			07/16/19 18:51	1
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L			07/16/19 18:51	1
Ethylbenzene	1.0	U	1.0	0.11	ug/L			07/16/19 18:51	1
Tetrachloroethene	**70**		3.3	0.50	ug/L			07/19/19 12:27	3.33
Toluene	1.0	U	1.0	0.14	ug/L			07/16/19 18:51	1
trans-1,2-Dichloroethene	**1.2**		1.0	0.19	ug/L			07/16/19 18:51	1
1,1,1-Trichloroethane	**1.7**		1.0	0.24	ug/L			07/16/19 18:51	1
Trichloroethene	**33**		1.0	0.10	ug/L			07/16/19 18:51	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			07/16/19 18:51	1
Xylenes, Total	2.0	U	2.0	0.15	ug/L			07/16/19 18:51	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*88*		*59 - 120*		*07/16/19 18:51*	*1*
4-Bromofluorobenzene (Surr)	*91*		*59 - 120*		*07/19/19 12:27*	*3.33*
Dibromofluoromethane (Surr)	*106*		*75 - 128*		*07/16/19 18:51*	*1*
Dibromofluoromethane (Surr)	*108*		*75 - 128*		*07/19/19 12:27*	*3.33*
1,2-Dichloroethane-d4 (Surr)	*95*		*70 - 121*		*07/16/19 18:51*	*1*
1,2-Dichloroethane-d4 (Surr)	*100*		*70 - 121*		*07/19/19 12:27*	*3.33*
Toluene-d8 (Surr)	*97*		*70 - 123*		*07/16/19 18:51*	*1*
Toluene-d8 (Surr)	*100*		*70 - 123*		*07/19/19 12:27*	*3.33*

Client: ARCADIS U.S., Inc.
Project/Site: Racer Moraine

Job ID: 240-115711-1

Client Sample ID: W-3-S/070919/
Date Collected: 07/09/19 15:20
Date Received: 07/12/19 08:00

Lab Sample ID: 240-115711-2
Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	1.0	U	1.0	0.13	ug/L			07/17/19 17:28	1
cis-1,2-Dichloroethene	**1.1**		1.0	0.16	ug/L			07/17/19 17:28	1
1,1-Dichloroethane	**0.83**	**J**	1.0	0.17	ug/L			07/17/19 17:28	1
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L			07/17/19 17:28	1
Ethylbenzene	1.0	U	1.0	0.11	ug/L			07/17/19 17:28	1
Tetrachloroethene	**81**		5.0	0.75	ug/L			07/18/19 15:30	5
Toluene	1.0	U	1.0	0.14	ug/L			07/17/19 17:28	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			07/17/19 17:28	1
1,1,1-Trichloroethane	**2.5**		1.0	0.24	ug/L			07/17/19 17:28	1
Trichloroethene	**5.6**		1.0	0.10	ug/L			07/17/19 17:28	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			07/17/19 17:28	1
Xylenes, Total	2.0	U	2.0	0.15	ug/L			07/17/19 17:28	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*86*		*59 - 120*		*07/17/19 17:28*	*1*
4-Bromofluorobenzene (Surr)	*79*		*59 - 120*		*07/18/19 15:30*	*5*
Dibromofluoromethane (Surr)	*103*		*75 - 128*		*07/17/19 17:28*	*1*
Dibromofluoromethane (Surr)	*107*		*75 - 128*		*07/18/19 15:30*	*5*
1,2-Dichloroethane-d4 (Surr)	*96*		*70 - 121*		*07/17/19 17:28*	*1*
1,2-Dichloroethane-d4 (Surr)	*97*		*70 - 121*		*07/18/19 15:30*	*5*
Toluene-d8 (Surr)	*94*		*70 - 123*		*07/17/19 17:28*	*1*
Toluene-d8 (Surr)	*97*		*70 - 123*		*07/18/19 15:30*	*5*

Client: ARCADIS U.S., Inc.
Project/Site: Racer Moraine

Job ID: 240-115711-1

Client Sample ID: W-2-S/070919/
Date Collected: 07/09/19 16:30
Date Received: 07/12/19 08:00

Lab Sample ID: 240-115711-3
Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	1.0	U	1.0	0.13	ug/L			07/17/19 17:52	1
cis-1,2-Dichloroethene	**0.29**	**J**	1.0	0.16	ug/L			07/17/19 17:52	1
1,1-Dichloroethane	**0.23**	**J**	1.0	0.17	ug/L			07/17/19 17:52	1
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L			07/17/19 17:52	1
Ethylbenzene	1.0	U	1.0	0.11	ug/L			07/17/19 17:52	1
Tetrachloroethene	**20**		1.0	0.15	ug/L			07/17/19 17:52	1
Toluene	1.0	U	1.0	0.14	ug/L			07/17/19 17:52	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			07/17/19 17:52	1
1,1,1-Trichloroethane	**0.60**	**J**	1.0	0.24	ug/L			07/17/19 17:52	1
Trichloroethene	**2.8**		1.0	0.10	ug/L			07/17/19 17:52	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			07/17/19 17:52	1
Xylenes, Total	2.0	U	2.0	0.15	ug/L			07/17/19 17:52	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*81*		*59 - 120*		*07/17/19 17:52*	*1*
Dibromofluoromethane (Surr)	*104*		*75 - 128*		*07/17/19 17:52*	*1*
1,2-Dichloroethane-d4 (Surr)	*98*		*70 - 121*		*07/17/19 17:52*	*1*
Toluene-d8 (Surr)	*97*		*70 - 123*		*07/17/19 17:52*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Racer Moraine

Job ID: 240-115711-1

Client Sample ID: GM-50/071019/
Date Collected: 07/10/19 08:30
Date Received: 07/12/19 08:00

Lab Sample ID: 240-115711-4
Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	1.0	U	1.0	0.13	ug/L			07/18/19 15:53	1
cis-1,2-Dichloroethene	**7.4**		1.0	0.16	ug/L			07/18/19 15:53	1
1,1-Dichloroethane	**7.4**		1.0	0.17	ug/L			07/18/19 15:53	1
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L			07/18/19 15:53	1
Ethylbenzene	1.0	U	1.0	0.11	ug/L			07/18/19 15:53	1
Tetrachloroethene	**2.2**		1.0	0.15	ug/L			07/18/19 15:53	1
Toluene	1.0	U	1.0	0.14	ug/L			07/18/19 15:53	1
trans-1,2-Dichloroethene	**0.20**	**J**	1.0	0.19	ug/L			07/18/19 15:53	1
1,1,1-Trichloroethane	1.0	U	1.0	0.24	ug/L			07/18/19 15:53	1
Trichloroethene	**0.39**	**J**	1.0	0.10	ug/L			07/18/19 15:53	1
Vinyl chloride	**1.8**		1.0	0.20	ug/L			07/18/19 15:53	1
Xylenes, Total	2.0	U	2.0	0.15	ug/L			07/18/19 15:53	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*81*		*59 - 120*		*07/18/19 15:53*	*1*
Dibromofluoromethane (Surr)	*106*		*75 - 128*		*07/18/19 15:53*	*1*
1,2-Dichloroethane-d4 (Surr)	*97*		*70 - 121*		*07/18/19 15:53*	*1*
Toluene-d8 (Surr)	*100*		*70 - 123*		*07/18/19 15:53*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Racer Moraine

Job ID: 240-115711-1

Client Sample ID: GM-47/071019/
Date Collected: 07/10/19 09:35
Date Received: 07/12/19 08:00

Lab Sample ID: 240-115711-5
Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	1.0	U	1.0	0.13	ug/L			07/18/19 16:17	1
cis-1,2-Dichloroethene	**29**		1.0	0.16	ug/L			07/18/19 16:17	1
1,1-Dichloroethane	**5.2**		1.0	0.17	ug/L			07/18/19 16:17	1
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L			07/18/19 16:17	1
Ethylbenzene	1.0	U	1.0	0.11	ug/L			07/18/19 16:17	1
Tetrachloroethene	**40**		1.0	0.15	ug/L			07/18/19 16:17	1
Toluene	1.0	U	1.0	0.14	ug/L			07/18/19 16:17	1
trans-1,2-Dichloroethene	**0.81**	**J**	1.0	0.19	ug/L			07/18/19 16:17	1
1,1,1-Trichloroethane	1.0	U	1.0	0.24	ug/L			07/18/19 16:17	1
Trichloroethene	**9.3**		1.0	0.10	ug/L			07/18/19 16:17	1
Vinyl chloride	**0.60**	**J**	1.0	0.20	ug/L			07/18/19 16:17	1
Xylenes, Total	2.0	U	2.0	0.15	ug/L			07/18/19 16:17	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*77*		*59 - 120*		*07/18/19 16:17*	*1*
Dibromofluoromethane (Surr)	*104*		*75 - 128*		*07/18/19 16:17*	*1*
1,2-Dichloroethane-d4 (Surr)	*96*		*70 - 121*		*07/18/19 16:17*	*1*
Toluene-d8 (Surr)	*96*		*70 - 123*		*07/18/19 16:17*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Racer Moraine

Job ID: 240-115711-1

Client Sample ID: GM-51/071019/
Date Collected: 07/10/19 11:55
Date Received: 07/12/19 08:00

Lab Sample ID: 240-115711-6
Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	1.0	U	1.0	0.13	ug/L			07/18/19 16:41	1
cis-1,2-Dichloroethene	**6.1**		1.0	0.16	ug/L			07/18/19 16:41	1
1,1-Dichloroethane	**1.9**		1.0	0.17	ug/L			07/18/19 16:41	1
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L			07/18/19 16:41	1
Ethylbenzene	1.0	U	1.0	0.11	ug/L			07/18/19 16:41	1
Tetrachloroethene	**44**		2.0	0.30	ug/L			07/23/19 15:48	2
Toluene	1.0	U	1.0	0.14	ug/L			07/18/19 16:41	1
trans-1,2-Dichloroethene	**0.22**	**J**	1.0	0.19	ug/L			07/18/19 16:41	1
1,1,1-Trichloroethane	1.0	U	1.0	0.24	ug/L			07/18/19 16:41	1
Trichloroethene	**5.0**		1.0	0.10	ug/L			07/18/19 16:41	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			07/18/19 16:41	1
Xylenes, Total	2.0	U	2.0	0.15	ug/L			07/18/19 16:41	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*75*		*59 - 120*		*07/18/19 16:41*	*1*
4-Bromofluorobenzene (Surr)	*80*		*59 - 120*		*07/23/19 15:48*	*2*
Dibromofluoromethane (Surr)	*107*		*75 - 128*		*07/18/19 16:41*	*1*
Dibromofluoromethane (Surr)	*107*		*75 - 128*		*07/23/19 15:48*	*2*
1,2-Dichloroethane-d4 (Surr)	*97*		*70 - 121*		*07/18/19 16:41*	*1*
1,2-Dichloroethane-d4 (Surr)	*101*		*70 - 121*		*07/23/19 15:48*	*2*
Toluene-d8 (Surr)	*96*		*70 - 123*		*07/18/19 16:41*	*1*
Toluene-d8 (Surr)	*96*		*70 - 123*		*07/23/19 15:48*	*2*

Client: ARCADIS U.S., Inc.
Project/Site: Racer Moraine

Job ID: 240-115711-1

Client Sample ID: GM-49/071019/
Date Collected: 07/10/19 14:50
Date Received: 07/12/19 08:00

Lab Sample ID: 240-115711-7
Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	1.0	U	1.0	0.13	ug/L			07/18/19 17:05	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.16	ug/L			07/18/19 17:05	1
1,1-Dichloroethane	**0.21**	**J**	1.0	0.17	ug/L			07/18/19 17:05	1
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L			07/18/19 17:05	1
Ethylbenzene	1.0	U	1.0	0.11	ug/L			07/18/19 17:05	1
Tetrachloroethene	**1.2**		1.0	0.15	ug/L			07/18/19 17:05	1
Toluene	1.0	U	1.0	0.14	ug/L			07/18/19 17:05	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			07/18/19 17:05	1
1,1,1-Trichloroethane	1.0	U	1.0	0.24	ug/L			07/18/19 17:05	1
Trichloroethene	**2.4**		1.0	0.10	ug/L			07/18/19 17:05	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			07/18/19 17:05	1
Xylenes, Total	2.0	U	2.0	0.15	ug/L			07/18/19 17:05	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*80*		*59 - 120*		*07/18/19 17:05*	*1*
Dibromofluoromethane (Surr)	*111*		*75 - 128*		*07/18/19 17:05*	*1*
1,2-Dichloroethane-d4 (Surr)	*100*		*70 - 121*		*07/18/19 17:05*	*1*
Toluene-d8 (Surr)	*99*		*70 - 123*		*07/18/19 17:05*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Racer Moraine

Job ID: 240-115711-1

Client Sample ID: GM-52/071019/
Date Collected: 07/10/19 16:00
Date Received: 07/12/19 08:00

Lab Sample ID: 240-115711-8
Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	1.0	U	1.0	0.13	ug/L			07/18/19 17:29	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.16	ug/L			07/18/19 17:29	1
1,1-Dichloroethane	1.0	U	1.0	0.17	ug/L			07/18/19 17:29	1
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L			07/18/19 17:29	1
Ethylbenzene	1.0	U	1.0	0.11	ug/L			07/18/19 17:29	1
Tetrachloroethene	**15**		1.0	0.15	ug/L			07/18/19 17:29	1
Toluene	1.0	U	1.0	0.14	ug/L			07/18/19 17:29	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			07/18/19 17:29	1
1,1,1-Trichloroethane	1.0	U	1.0	0.24	ug/L			07/18/19 17:29	1
Trichloroethene	**0.83**	**J**	1.0	0.10	ug/L			07/18/19 17:29	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			07/18/19 17:29	1
Xylenes, Total	2.0	U	2.0	0.15	ug/L			07/18/19 17:29	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*78*		*59 - 120*		*07/18/19 17:29*	*1*
Dibromofluoromethane (Surr)	*110*		*75 - 128*		*07/18/19 17:29*	*1*
1,2-Dichloroethane-d4 (Surr)	*99*		*70 - 121*		*07/18/19 17:29*	*1*
Toluene-d8 (Surr)	*96*		*70 - 123*		*07/18/19 17:29*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Racer Moraine

Job ID: 240-115711-1

Client Sample ID: GM-48/071019/
Date Collected: 07/10/19 12:55
Date Received: 07/12/19 08:00

Lab Sample ID: 240-115711-9
Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	1.0	U	1.0	0.13	ug/L			07/18/19 17:53	1
cis-1,2-Dichloroethene	**0.89**	**J**	1.0	0.16	ug/L			07/18/19 17:53	1
1,1-Dichloroethane	**0.19**	**J**	1.0	0.17	ug/L			07/18/19 17:53	1
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L			07/18/19 17:53	1
Ethylbenzene	1.0	U	1.0	0.11	ug/L			07/18/19 17:53	1
Tetrachloroethene	**28**		1.0	0.15	ug/L			07/18/19 17:53	1
Toluene	1.0	U	1.0	0.14	ug/L			07/18/19 17:53	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			07/18/19 17:53	1
1,1,1-Trichloroethane	1.0	U	1.0	0.24	ug/L			07/18/19 17:53	1
Trichloroethene	**1.3**		1.0	0.10	ug/L			07/18/19 17:53	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			07/18/19 17:53	1
Xylenes, Total	2.0	U	2.0	0.15	ug/L			07/18/19 17:53	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*78*		*59 - 120*		*07/18/19 17:53*	*1*
Dibromofluoromethane (Surr)	*110*		*75 - 128*		*07/18/19 17:53*	*1*
1,2-Dichloroethane-d4 (Surr)	*101*		*70 - 121*		*07/18/19 17:53*	*1*
Toluene-d8 (Surr)	*96*		*70 - 123*		*07/18/19 17:53*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Racer Moraine

Job ID: 240-115711-1

Client Sample ID: EB-2/071019/
Date Collected: 07/10/19 17:00
Date Received: 07/12/19 08:00

Lab Sample ID: 240-115711-10
Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	1.0	U	1.0	0.13	ug/L			07/17/19 18:16	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.16	ug/L			07/17/19 18:16	1
1,1-Dichloroethane	1.0	U	1.0	0.17	ug/L			07/17/19 18:16	1
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L			07/17/19 18:16	1
Ethylbenzene	1.0	U	1.0	0.11	ug/L			07/17/19 18:16	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			07/17/19 18:16	1
Toluene	1.0	U	1.0	0.14	ug/L			07/17/19 18:16	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			07/17/19 18:16	1
1,1,1-Trichloroethane	1.0	U	1.0	0.24	ug/L			07/17/19 18:16	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			07/17/19 18:16	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			07/17/19 18:16	1
Xylenes, Total	2.0	U	2.0	0.15	ug/L			07/17/19 18:16	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*79*		*59 - 120*		*07/17/19 18:16*	*1*
Dibromofluoromethane (Surr)	*107*		*75 - 128*		*07/17/19 18:16*	*1*
1,2-Dichloroethane-d4 (Surr)	*95*		*70 - 121*		*07/17/19 18:16*	*1*
Toluene-d8 (Surr)	*98*		*70 - 123*		*07/17/19 18:16*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Racer Moraine

Job ID: 240-115711-1

Client Sample ID: HR-4/070919/
Date Collected: 07/09/19 13:35
Date Received: 07/12/19 08:00

Lab Sample ID: 240-115711-11
Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	1.0	U	1.0	0.13	ug/L			07/17/19 18:40	1
cis-1,2-Dichloroethene	**0.56**	**J**	1.0	0.16	ug/L			07/17/19 18:40	1
1,1-Dichloroethane	**1.7**		1.0	0.17	ug/L			07/17/19 18:40	1
1,1-Dichloroethene	**0.19**	**J**	1.0	0.19	ug/L			07/17/19 18:40	1
Ethylbenzene	1.0	U	1.0	0.11	ug/L			07/17/19 18:40	1
Tetrachloroethene	**0.22**	**J**	1.0	0.15	ug/L			07/17/19 18:40	1
Toluene	1.0	U	1.0	0.14	ug/L			07/17/19 18:40	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			07/17/19 18:40	1
1,1,1-Trichloroethane	**2.2**		1.0	0.24	ug/L			07/17/19 18:40	1
Trichloroethene	**0.29**	**J**	1.0	0.10	ug/L			07/17/19 18:40	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			07/17/19 18:40	1
Xylenes, Total	2.0	U	2.0	0.15	ug/L			07/17/19 18:40	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*80*		*59 - 120*		*07/17/19 18:40*	*1*
Dibromofluoromethane (Surr)	*107*		*75 - 128*		*07/17/19 18:40*	*1*
1,2-Dichloroethane-d4 (Surr)	*97*		*70 - 121*		*07/17/19 18:40*	*1*
Toluene-d8 (Surr)	*102*		*70 - 123*		*07/17/19 18:40*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Racer Moraine

Job ID: 240-115711-1

Client Sample ID: W-2-N/070919/
Date Collected: 07/09/19 15:50
Date Received: 07/12/19 08:00

Lab Sample ID: 240-115711-12
Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	1.0	U	1.0	0.13	ug/L			07/17/19 19:51	1
cis-1,2-Dichloroethene	**1.8**		1.0	0.16	ug/L			07/17/19 19:51	1
1,1-Dichloroethane	**0.19**	**J**	1.0	0.17	ug/L			07/17/19 19:51	1
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L			07/17/19 19:51	1
Ethylbenzene	1.0	U	1.0	0.11	ug/L			07/17/19 19:51	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			07/17/19 19:51	1
Toluene	1.0	U	1.0	0.14	ug/L			07/17/19 19:51	1
trans-1,2-Dichloroethene	**0.22**	**J**	1.0	0.19	ug/L			07/17/19 19:51	1
1,1,1-Trichloroethane	1.0	U	1.0	0.24	ug/L			07/17/19 19:51	1
Trichloroethene	**1.1**		1.0	0.10	ug/L			07/17/19 19:51	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			07/17/19 19:51	1
Xylenes, Total	2.0	U	2.0	0.15	ug/L			07/17/19 19:51	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*82*		*59 - 120*		*07/17/19 19:51*	*1*
Dibromofluoromethane (Surr)	*100*		*75 - 128*		*07/17/19 19:51*	*1*
1,2-Dichloroethane-d4 (Surr)	*94*		*70 - 121*		*07/17/19 19:51*	*1*
Toluene-d8 (Surr)	*104*		*70 - 123*		*07/17/19 19:51*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Racer Moraine

Job ID: 240-115711-1

Client Sample ID: W-3-N/070919/
Date Collected: 07/09/19 20:35
Date Received: 07/12/19 08:00

Lab Sample ID: 240-115711-13
Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	1.0	U	1.0	0.13	ug/L			07/17/19 20:15	1
cis-1,2-Dichloroethene	**14**		1.0	0.16	ug/L			07/17/19 20:15	1
1,1-Dichloroethane	1.0	U	1.0	0.17	ug/L			07/17/19 20:15	1
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L			07/17/19 20:15	1
Ethylbenzene	1.0	U	1.0	0.11	ug/L			07/17/19 20:15	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			07/17/19 20:15	1
Toluene	1.0	U	1.0	0.14	ug/L			07/17/19 20:15	1
trans-1,2-Dichloroethene	**0.23**	**J**	1.0	0.19	ug/L			07/17/19 20:15	1
1,1,1-Trichloroethane	1.0	U	1.0	0.24	ug/L			07/17/19 20:15	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			07/17/19 20:15	1
Vinyl chloride	**0.81**	**J**	1.0	0.20	ug/L			07/17/19 20:15	1
Xylenes, Total	2.0	U	2.0	0.15	ug/L			07/17/19 20:15	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*81*		*59 - 120*		*07/17/19 20:15*	*1*
Dibromofluoromethane (Surr)	*102*		*75 - 128*		*07/17/19 20:15*	*1*
1,2-Dichloroethane-d4 (Surr)	*95*		*70 - 121*		*07/17/19 20:15*	*1*
Toluene-d8 (Surr)	*102*		*70 - 123*		*07/17/19 20:15*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Racer Moraine

Job ID: 240-115711-1

Client Sample ID: W-4-N/070919/
Date Collected: 07/09/19 18:15
Date Received: 07/12/19 08:00

Lab Sample ID: 240-115711-14
Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	1.0	U	1.0	0.13	ug/L			07/17/19 20:39	1
cis-1,2-Dichloroethene	**6.6**		1.0	0.16	ug/L			07/17/19 20:39	1
1,1-Dichloroethane	**7.6**		1.0	0.17	ug/L			07/17/19 20:39	1
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L			07/17/19 20:39	1
Ethylbenzene	1.0	U	1.0	0.11	ug/L			07/17/19 20:39	1
Tetrachloroethene	**0.72**	**J**	1.0	0.15	ug/L			07/17/19 20:39	1
Toluene	1.0	U	1.0	0.14	ug/L			07/17/19 20:39	1
trans-1,2-Dichloroethene	**0.88**	**J**	1.0	0.19	ug/L			07/17/19 20:39	1
1,1,1-Trichloroethane	1.0	U	1.0	0.24	ug/L			07/17/19 20:39	1
Trichloroethene	**9.2**		1.0	0.10	ug/L			07/17/19 20:39	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			07/17/19 20:39	1
Xylenes, Total	2.0	U	2.0	0.15	ug/L			07/17/19 20:39	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*80*		*59 - 120*		*07/17/19 20:39*	*1*
Dibromofluoromethane (Surr)	*103*		*75 - 128*		*07/17/19 20:39*	*1*
1,2-Dichloroethane-d4 (Surr)	*99*		*70 - 121*		*07/17/19 20:39*	*1*
Toluene-d8 (Surr)	*101*		*70 - 123*		*07/17/19 20:39*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Racer Moraine

Job ID: 240-115711-1

Client Sample ID: EB-1/071019/
Date Collected: 07/10/19 07:30
Date Received: 07/12/19 08:00

Lab Sample ID: 240-115711-15
Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	1.0	U	1.0	0.13	ug/L			07/17/19 21:03	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.16	ug/L			07/17/19 21:03	1
1,1-Dichloroethane	1.0	U	1.0	0.17	ug/L			07/17/19 21:03	1
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L			07/17/19 21:03	1
Ethylbenzene	1.0	U	1.0	0.11	ug/L			07/17/19 21:03	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			07/17/19 21:03	1
Toluene	1.0	U	1.0	0.14	ug/L			07/17/19 21:03	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			07/17/19 21:03	1
1,1,1-Trichloroethane	1.0	U	1.0	0.24	ug/L			07/17/19 21:03	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			07/17/19 21:03	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			07/17/19 21:03	1
Xylenes, Total	2.0	U	2.0	0.15	ug/L			07/17/19 21:03	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*79*		*59 - 120*		*07/17/19 21:03*	*1*
Dibromofluoromethane (Surr)	*105*		*75 - 128*		*07/17/19 21:03*	*1*
1,2-Dichloroethane-d4 (Surr)	*98*		*70 - 121*		*07/17/19 21:03*	*1*
Toluene-d8 (Surr)	*100*		*70 - 123*		*07/17/19 21:03*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Racer Moraine

Job ID: 240-115711-1

Client Sample ID: GM-63/071019/
Date Collected: 07/10/19 11:50
Date Received: 07/12/19 08:00

Lab Sample ID: 240-115711-16
Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	1.0	U	1.0	0.13	ug/L			07/18/19 18:17	1
cis-1,2-Dichloroethene	**2.6**		1.0	0.16	ug/L			07/18/19 18:17	1
1,1-Dichloroethane	**1.6**		1.0	0.17	ug/L			07/18/19 18:17	1
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L			07/18/19 18:17	1
Ethylbenzene	1.0	U	1.0	0.11	ug/L			07/18/19 18:17	1
Tetrachloroethene	**12**		1.0	0.15	ug/L			07/18/19 18:17	1
Toluene	1.0	U	1.0	0.14	ug/L			07/18/19 18:17	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			07/18/19 18:17	1
1,1,1-Trichloroethane	1.0	U	1.0	0.24	ug/L			07/18/19 18:17	1
Trichloroethene	**3.7**		1.0	0.10	ug/L			07/18/19 18:17	1
Vinyl chloride	**0.31**	**J**	1.0	0.20	ug/L			07/18/19 18:17	1
Xylenes, Total	2.0	U	2.0	0.15	ug/L			07/18/19 18:17	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*79*		*59 - 120*		*07/18/19 18:17*	*1*
Dibromofluoromethane (Surr)	*108*		*75 - 128*		*07/18/19 18:17*	*1*
1,2-Dichloroethane-d4 (Surr)	*99*		*70 - 121*		*07/18/19 18:17*	*1*
Toluene-d8 (Surr)	*98*		*70 - 123*		*07/18/19 18:17*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Racer Moraine

Job ID: 240-115711-1

Client Sample ID: GM-64/071019/
Date Collected: 07/10/19 09:25
Date Received: 07/12/19 08:00

Lab Sample ID: 240-115711-17
Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	1.0	U	1.0	0.13	ug/L			07/18/19 18:40	1
cis-1,2-Dichloroethene	**40**		1.7	0.27	ug/L			07/23/19 16:12	1.67
1,1-Dichloroethane	**2.5**		1.0	0.17	ug/L			07/18/19 18:40	1
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L			07/18/19 18:40	1
Ethylbenzene	1.0	U	1.0	0.11	ug/L			07/18/19 18:40	1
Tetrachloroethene	**15**		1.0	0.15	ug/L			07/18/19 18:40	1
Toluene	1.0	U	1.0	0.14	ug/L			07/18/19 18:40	1
trans-1,2-Dichloroethene	**0.87**	**J**	1.0	0.19	ug/L			07/18/19 18:40	1
1,1,1-Trichloroethane	**0.65**	**J**	1.0	0.24	ug/L			07/18/19 18:40	1
Trichloroethene	**31**		1.0	0.10	ug/L			07/18/19 18:40	1
Vinyl chloride	**1.3**		1.0	0.20	ug/L			07/18/19 18:40	1
Xylenes, Total	2.0	U	2.0	0.15	ug/L			07/18/19 18:40	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*79*		*59 - 120*		*07/18/19 18:40*	*1*
4-Bromofluorobenzene (Surr)	*80*		*59 - 120*		*07/23/19 16:12*	*1.67*
Dibromofluoromethane (Surr)	*108*		*75 - 128*		*07/18/19 18:40*	*1*
Dibromofluoromethane (Surr)	*106*		*75 - 128*		*07/23/19 16:12*	*1.67*
1,2-Dichloroethane-d4 (Surr)	*97*		*70 - 121*		*07/18/19 18:40*	*1*
1,2-Dichloroethane-d4 (Surr)	*96*		*70 - 121*		*07/23/19 16:12*	*1.67*
Toluene-d8 (Surr)	*98*		*70 - 123*		*07/18/19 18:40*	*1*
Toluene-d8 (Surr)	*101*		*70 - 123*		*07/23/19 16:12*	*1.67*

Client: ARCADIS U.S., Inc.
Project/Site: Racer Moraine

Job ID: 240-115711-1

Client Sample ID: RMW-98/071019/
Date Collected: 07/10/19 18:40
Date Received: 07/12/19 08:00

Lab Sample ID: 240-115711-18
Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	1.0	U	1.0	0.13	ug/L			07/18/19 19:04	1
cis-1,2-Dichloroethene	**6.8**		1.0	0.16	ug/L			07/18/19 19:04	1
1,1-Dichloroethane	**1.6**		1.0	0.17	ug/L			07/18/19 19:04	1
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L			07/18/19 19:04	1
Ethylbenzene	1.0	U	1.0	0.11	ug/L			07/18/19 19:04	1
Tetrachloroethene	**35**		1.7	0.25	ug/L			07/23/19 16:36	1.67
Toluene	1.0	U	1.0	0.14	ug/L			07/18/19 19:04	1
trans-1,2-Dichloroethene	**0.29**	**J**	1.0	0.19	ug/L			07/18/19 19:04	1
1,1,1-Trichloroethane	**1.2**		1.0	0.24	ug/L			07/18/19 19:04	1
Trichloroethene	**8.5**		1.0	0.10	ug/L			07/18/19 19:04	1
Vinyl chloride	**0.27**	**J**	1.0	0.20	ug/L			07/18/19 19:04	1
Xylenes, Total	2.0	U	2.0	0.15	ug/L			07/18/19 19:04	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*76*		*59 - 120*		*07/18/19 19:04*	*1*
4-Bromofluorobenzene (Surr)	*79*		*59 - 120*		*07/23/19 16:36*	*1.67*
Dibromofluoromethane (Surr)	*101*		*75 - 128*		*07/18/19 19:04*	*1*
Dibromofluoromethane (Surr)	*105*		*75 - 128*		*07/23/19 16:36*	*1.67*
1,2-Dichloroethane-d4 (Surr)	*96*		*70 - 121*		*07/18/19 19:04*	*1*
1,2-Dichloroethane-d4 (Surr)	*97*		*70 - 121*		*07/23/19 16:36*	*1.67*
Toluene-d8 (Surr)	*96*		*70 - 123*		*07/18/19 19:04*	*1*
Toluene-d8 (Surr)	*97*		*70 - 123*		*07/23/19 16:36*	*1.67*

Client: ARCADIS U.S., Inc.
Project/Site: Racer Moraine

Job ID: 240-115711-1

Client Sample ID: RMW-99/071019/
Date Collected: 07/10/19 17:05
Date Received: 07/12/19 08:00

Lab Sample ID: 240-115711-19
Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	1.0	U	1.0	0.13	ug/L			07/18/19 19:28	1
cis-1,2-Dichloroethene	**2.9**		1.0	0.16	ug/L			07/18/19 19:28	1
1,1-Dichloroethane	**2.1**		1.0	0.17	ug/L			07/18/19 19:28	1
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L			07/18/19 19:28	1
Ethylbenzene	1.0	U	1.0	0.11	ug/L			07/18/19 19:28	1
Tetrachloroethene	**35**		1.7	0.25	ug/L			07/23/19 17:00	1.67
Toluene	1.0	U	1.0	0.14	ug/L			07/18/19 19:28	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			07/18/19 19:28	1
1,1,1-Trichloroethane	**0.77**	**J**	1.0	0.24	ug/L			07/18/19 19:28	1
Trichloroethene	**2.3**		1.0	0.10	ug/L			07/18/19 19:28	1
Vinyl chloride	**0.26**	**J**	1.0	0.20	ug/L			07/18/19 19:28	1
Xylenes, Total	2.0	U	2.0	0.15	ug/L			07/18/19 19:28	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*75*		*59 - 120*		*07/18/19 19:28*	*1*
4-Bromofluorobenzene (Surr)	*80*		*59 - 120*		*07/23/19 17:00*	*1.67*
Dibromofluoromethane (Surr)	*110*		*75 - 128*		*07/18/19 19:28*	*1*
Dibromofluoromethane (Surr)	*112*		*75 - 128*		*07/23/19 17:00*	*1.67*
1,2-Dichloroethane-d4 (Surr)	*99*		*70 - 121*		*07/18/19 19:28*	*1*
1,2-Dichloroethane-d4 (Surr)	*100*		*70 - 121*		*07/23/19 17:00*	*1.67*
Toluene-d8 (Surr)	*94*		*70 - 123*		*07/18/19 19:28*	*1*
Toluene-d8 (Surr)	*95*		*70 - 123*		*07/23/19 17:00*	*1.67*

Client: ARCADIS U.S., Inc.
Project/Site: Racer Moraine

Job ID: 240-115711-1

Client Sample ID: WSV-23/071019/
Date Collected: 07/10/19 14:20
Date Received: 07/12/19 08:00

Lab Sample ID: 240-115711-20
Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	1.0	U	1.0	0.13	ug/L			07/18/19 19:52	1
cis-1,2-Dichloroethene	**0.77**	**J**	1.0	0.16	ug/L			07/18/19 19:52	1
1,1-Dichloroethane	**0.86**	**J**	1.0	0.17	ug/L			07/18/19 19:52	1
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L			07/18/19 19:52	1
Ethylbenzene	1.0	U	1.0	0.11	ug/L			07/18/19 19:52	1
Tetrachloroethene	**28**		1.0	0.15	ug/L			07/18/19 19:52	1
Toluene	1.0	U	1.0	0.14	ug/L			07/18/19 19:52	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			07/18/19 19:52	1
1,1,1-Trichloroethane	**1.7**		1.0	0.24	ug/L			07/18/19 19:52	1
Trichloroethene	**3.7**		1.0	0.10	ug/L			07/18/19 19:52	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			07/18/19 19:52	1
Xylenes, Total	2.0	U	2.0	0.15	ug/L			07/18/19 19:52	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*77*		*59 - 120*		*07/18/19 19:52*	*1*
Dibromofluoromethane (Surr)	*112*		*75 - 128*		*07/18/19 19:52*	*1*
1,2-Dichloroethane-d4 (Surr)	*100*		*70 - 121*		*07/18/19 19:52*	*1*
Toluene-d8 (Surr)	*93*		*70 - 123*		*07/18/19 19:52*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Racer Moraine

Job ID: 240-115711-1

Client Sample ID: DUP-1/070919/
Date Collected: 07/09/19 00:00
Date Received: 07/12/19 08:00

Lab Sample ID: 240-115711-21
Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	1.0	U	1.0	0.13	ug/L			07/18/19 20:16	1
cis-1,2-Dichloroethene	**0.62**	**J**	1.0	0.16	ug/L			07/18/19 20:16	1
1,1-Dichloroethane	**1.8**		1.0	0.17	ug/L			07/18/19 20:16	1
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L			07/18/19 20:16	1
Ethylbenzene	1.0	U	1.0	0.11	ug/L			07/18/19 20:16	1
Tetrachloroethene	**0.26**	**J**	1.0	0.15	ug/L			07/18/19 20:16	1
Toluene	1.0	U	1.0	0.14	ug/L			07/18/19 20:16	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			07/18/19 20:16	1
1,1,1-Trichloroethane	**2.3**		1.0	0.24	ug/L			07/18/19 20:16	1
Trichloroethene	**0.40**	**J**	1.0	0.10	ug/L			07/18/19 20:16	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			07/18/19 20:16	1
Xylenes, Total	2.0	U	2.0	0.15	ug/L			07/18/19 20:16	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*78*		*59 - 120*		*07/18/19 20:16*	*1*
Dibromofluoromethane (Surr)	*112*		*75 - 128*		*07/18/19 20:16*	*1*
1,2-Dichloroethane-d4 (Surr)	*104*		*70 - 121*		*07/18/19 20:16*	*1*
Toluene-d8 (Surr)	*101*		*70 - 123*		*07/18/19 20:16*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Racer Moraine

Job ID: 240-115711-1

Client Sample ID: TRIP BLANK

Date Collected: 07/11/19 08:20
Date Received: 07/12/19 08:00

Lab Sample ID: 240-115711-22

Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	1.0	U	1.0	0.13	ug/L			07/17/19 21:26	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.16	ug/L			07/17/19 21:26	1
1,1-Dichloroethane	1.0	U	1.0	0.17	ug/L			07/17/19 21:26	1
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L			07/17/19 21:26	1
Ethylbenzene	1.0	U	1.0	0.11	ug/L			07/17/19 21:26	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			07/17/19 21:26	1
Toluene	1.0	U	1.0	0.14	ug/L			07/17/19 21:26	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			07/17/19 21:26	1
1,1,1-Trichloroethane	1.0	U	1.0	0.24	ug/L			07/17/19 21:26	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			07/17/19 21:26	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			07/17/19 21:26	1
Xylenes, Total	2.0	U	2.0	0.15	ug/L			07/17/19 21:26	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*78*		*59 - 120*		*07/17/19 21:26*	*1*
Dibromofluoromethane (Surr)	*109*		*75 - 128*		*07/17/19 21:26*	*1*
1,2-Dichloroethane-d4 (Surr)	*97*		*70 - 121*		*07/17/19 21:26*	*1*
Toluene-d8 (Surr)	*99*		*70 - 123*		*07/17/19 21:26*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Racer Moraine

Job ID: 240-115711-1

Client Sample ID: EB-1/071119/
Date Collected: 07/11/19 08:20
Date Received: 07/12/19 08:00

Lab Sample ID: 240-115711-23
Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	1.0	U	1.0	0.13	ug/L			07/17/19 21:50	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.16	ug/L			07/17/19 21:50	1
1,1-Dichloroethane	1.0	U	1.0	0.17	ug/L			07/17/19 21:50	1
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L			07/17/19 21:50	1
Ethylbenzene	1.0	U	1.0	0.11	ug/L			07/17/19 21:50	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			07/17/19 21:50	1
Toluene	1.0	U	1.0	0.14	ug/L			07/17/19 21:50	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			07/17/19 21:50	1
1,1,1-Trichloroethane	1.0	U	1.0	0.24	ug/L			07/17/19 21:50	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			07/17/19 21:50	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			07/17/19 21:50	1
Xylenes, Total	2.0	U	2.0	0.15	ug/L			07/17/19 21:50	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*79*		*59 - 120*		*07/17/19 21:50*	*1*
Dibromofluoromethane (Surr)	*108*		*75 - 128*		*07/17/19 21:50*	*1*
1,2-Dichloroethane-d4 (Surr)	*101*		*70 - 121*		*07/17/19 21:50*	*1*
Toluene-d8 (Surr)	*98*		*70 - 123*		*07/17/19 21:50*	*1*

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Racer Moraine

Job ID: 240-115711-1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)			
Lab Sample ID	Client Sample ID	BFB (59-120)	DBFM (75-128)	DCA (70-121)	TOL (70-123)
240-115711-1	W-4-S/070919/	88	106	95	97
240-115711-1	W-4-S/070919/	91	108	100	100
240-115711-2	W-3-S/070919/	86	103	96	94
240-115711-2	W-3-S/070919/	79	107	97	97
240-115711-3	W-2-S/070919/	81	104	98	97
240-115711-4	GM-50/071019/	81	106	97	100
240-115711-5	GM-47/071019/	77	104	96	96
240-115711-6	GM-51/071019/	75	107	97	96
240-115711-6	GM-51/071019/	80	107	101	96
240-115711-7	GM-49/071019/	80	111	100	99
240-115711-8	GM-52/071019/	78	110	99	96
240-115711-9	GM-48/071019/	78	110	101	96
240-115711-10	EB-2/071019/	79	107	95	98
240-115711-11	HR-4/070919/	80	107	97	102
240-115711-11 MS	HR-4/070919/	103	94	82	105
240-115711-11 MSD	HR-4/070919/	104	93	82	108
240-115711-12	W-2-N/070919/	82	100	94	104
240-115711-13	W-3-N/070919/	81	102	95	102
240-115711-14	W-4-N/070919/	80	103	99	101
240-115711-15	EB-1/071019/	79	105	98	100
240-115711-16	GM-63/071019/	79	108	99	98
240-115711-17	GM-64/071019/	79	108	97	98
240-115711-17	GM-64/071019/	80	106	96	101
240-115711-18	RMW-98/071019/	76	101	96	96
240-115711-18	RMW-98/071019/	79	105	97	97
240-115711-19	RMW-99/071019/	75	110	99	94
240-115711-19	RMW-99/071019/	80	112	100	95
240-115711-20	WSV-23/071019/	77	112	100	93
240-115711-21	DUP-1/070919/	78	112	104	101
240-115711-22	TRIP BLANK	78	109	97	99
240-115711-23	EB-1/071119/	79	108	101	98
LCS 240-391370/4	Lab Control Sample	103	98	88	102
LCS 240-391599/4	Lab Control Sample	104	94	82	107
LCS 240-391823/4	Lab Control Sample	102	95	82	109
LCS 240-391986/4	Lab Control Sample	112	98	93	104
LCS 240-392512/4	Lab Control Sample	103	95	86	106
MB 240-391370/6	Method Blank	94	109	97	104
MB 240-391599/7	Method Blank	82	105	93	100
MB 240-391823/7	Method Blank	82	103	98	102
MB 240-391986/6	Method Blank	97	107	104	102
MB 240-392512/7	Method Blank	83	107	98	101

Surrogate Legend

BFB = 4-Bromofluorobenzene (Surr)
DBFM = Dibromofluoromethane (Surr)
DCA = 1,2-Dichloroethane-d4 (Surr)
TOL = Toluene-d8 (Surr)

Method: 8260B - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-391370/6
Matrix: Water
Analysis Batch: 391370

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	1.0	U	1.0	0.13	ug/L			07/16/19 10:36	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.16	ug/L			07/16/19 10:36	1
1,1-Dichloroethane	1.0	U	1.0	0.17	ug/L			07/16/19 10:36	1
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L			07/16/19 10:36	1
Ethylbenzene	1.0	U	1.0	0.11	ug/L			07/16/19 10:36	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			07/16/19 10:36	1
Toluene	1.0	U	1.0	0.14	ug/L			07/16/19 10:36	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			07/16/19 10:36	1
1,1,1-Trichloroethane	1.0	U	1.0	0.24	ug/L			07/16/19 10:36	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			07/16/19 10:36	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			07/16/19 10:36	1
Xylenes, Total	2.0	U	2.0	0.15	ug/L			07/16/19 10:36	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*94*		*59 - 120*		*07/16/19 10:36*	*1*
Dibromofluoromethane (Surr)	*109*		*75 - 128*		*07/16/19 10:36*	*1*
1,2-Dichloroethane-d4 (Surr)	*97*		*70 - 121*		*07/16/19 10:36*	*1*
Toluene-d8 (Surr)	*104*		*70 - 123*		*07/16/19 10:36*	*1*

Lab Sample ID: LCS 240-391370/4
Matrix: Water
Analysis Batch: 391370

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Benzene	10.0	9.99		ug/L		100	80 - 123
cis-1,2-Dichloroethene	10.0	9.83		ug/L		98	76 - 128
1,1-Dichloroethane	10.0	9.48		ug/L		95	75 - 133
1,1-Dichloroethene	10.0	10.5		ug/L		105	65 - 139
Ethylbenzene	10.0	9.35		ug/L		93	80 - 120
m-Xylene & p-Xylene	10.0	9.98		ug/L		100	80 - 120
o-Xylene	10.0	9.28		ug/L		93	80 - 120
Tetrachloroethene	10.0	9.54		ug/L		95	74 - 130
Toluene	10.0	10.2		ug/L		102	78 - 129
trans-1,2-Dichloroethene	10.0	10.1		ug/L		101	78 - 133
1,1,1-Trichloroethane	10.0	9.14		ug/L		91	69 - 134
Trichloroethene	10.0	9.48		ug/L		95	76 - 125
Vinyl chloride	10.0	10.0		ug/L		100	58 - 143
Xylenes, Total	20.0	19.3		ug/L		96	80 - 120
Chloroethane	10.0	11.8		ug/L		118	33 - 173

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*103*		*59 - 120*
Dibromofluoromethane (Surr)	*98*		*75 - 128*
1,2-Dichloroethane-d4 (Surr)	*88*		*70 - 121*
Toluene-d8 (Surr)	*102*		*70 - 123*

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: MB 240-391599/7
Matrix: Water
Analysis Batch: 391599

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	1.0	U	1.0	0.13	ug/L			07/17/19 14:41	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.16	ug/L			07/17/19 14:41	1
1,1-Dichloroethane	1.0	U	1.0	0.17	ug/L			07/17/19 14:41	1
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L			07/17/19 14:41	1
Ethylbenzene	1.0	U	1.0	0.11	ug/L			07/17/19 14:41	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			07/17/19 14:41	1
Toluene	1.0	U	1.0	0.14	ug/L			07/17/19 14:41	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			07/17/19 14:41	1
1,1,1-Trichloroethane	1.0	U	1.0	0.24	ug/L			07/17/19 14:41	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			07/17/19 14:41	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			07/17/19 14:41	1
Xylenes, Total	2.0	U	2.0	0.15	ug/L			07/17/19 14:41	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*82*		*59 - 120*		*07/17/19 14:41*	*1*
Dibromofluoromethane (Surr)	*105*		*75 - 128*		*07/17/19 14:41*	*1*
1,2-Dichloroethane-d4 (Surr)	*93*		*70 - 121*		*07/17/19 14:41*	*1*
Toluene-d8 (Surr)	*100*		*70 - 123*		*07/17/19 14:41*	*1*

Lab Sample ID: LCS 240-391599/4
Matrix: Water
Analysis Batch: 391599

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Benzene	10.0	10.4		ug/L		104	80 - 123
cis-1,2-Dichloroethene	10.0	10.1		ug/L		101	76 - 128
1,1-Dichloroethane	10.0	9.79		ug/L		98	75 - 133
1,1-Dichloroethene	10.0	9.95		ug/L		100	65 - 139
Ethylbenzene	10.0	11.0		ug/L		110	80 - 120
m-Xylene & p-Xylene	10.0	10.8		ug/L		108	80 - 120
o-Xylene	10.0	11.3		ug/L		113	80 - 120
Tetrachloroethene	10.0	9.68		ug/L		97	74 - 130
Toluene	10.0	10.8		ug/L		108	78 - 129
trans-1,2-Dichloroethene	10.0	10.7		ug/L		107	78 - 133
1,1,1-Trichloroethane	10.0	9.24		ug/L		92	69 - 134
Trichloroethene	10.0	9.56		ug/L		96	76 - 125
Vinyl chloride	10.0	7.81		ug/L		78	58 - 143
Xylenes, Total	20.0	22.1		ug/L		111	80 - 120
Chloroethane	10.0	6.28		ug/L		63	33 - 173

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*104*		*59 - 120*
Dibromofluoromethane (Surr)	*94*		*75 - 128*
1,2-Dichloroethane-d4 (Surr)	*82*		*70 - 121*
Toluene-d8 (Surr)	*107*		*70 - 123*

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 240-115711-11 MS
Matrix: Water
Analysis Batch: 391599

Client Sample ID: HR-4/070919/
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Benzene	1.0	U	10.0	9.02		ug/L		90	71 - 122
cis-1,2-Dichloroethene	0.56	J	10.0	9.38		ug/L		88	64 - 130
1,1-Dichloroethane	1.7		10.0	10.3		ug/L		86	63 - 136
1,1-Dichloroethene	0.19	J	10.0	9.13		ug/L		91	53 - 140
Ethylbenzene	1.0	U	10.0	9.36		ug/L		94	66 - 120
m-Xylene & p-Xylene	2.0	U	10.0	9.66		ug/L		97	63 - 121
o-Xylene	1.0	U	10.0	9.58		ug/L		96	69 - 120
Tetrachloroethene	0.22	J	10.0	8.92		ug/L		87	51 - 136
Toluene	1.0	U	10.0	9.65		ug/L		96	62 - 132
trans-1,2-Dichloroethene	1.0	U	10.0	9.50		ug/L		95	68 - 133
1,1,1-Trichloroethane	2.2		10.0	10.1		ug/L		79	51 - 138
Trichloroethene	0.29	J	10.0	8.77		ug/L		85	55 - 131
Vinyl chloride	1.0	U	10.0	7.94		ug/L		79	43 - 154
Xylenes, Total	2.0	U	20.0	19.2		ug/L		96	67 - 120
Chloroethane	1.0	U	10.0	6.27		ug/L		63	11 - 189

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*103*		*59 - 120*
Dibromofluoromethane (Surr)	*94*		*75 - 128*
1,2-Dichloroethane-d4 (Surr)	*82*		*70 - 121*
Toluene-d8 (Surr)	*105*		*70 - 123*

Lab Sample ID: 240-115711-11 MSD
Matrix: Water
Analysis Batch: 391599

Client Sample ID: HR-4/070919/
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Benzene	1.0	U	10.0	10.2		ug/L		102	71 - 122	13	22
cis-1,2-Dichloroethene	0.56	J	10.0	10.5		ug/L		99	64 - 130	11	21
1,1-Dichloroethane	1.7		10.0	11.2		ug/L		95	63 - 136	9	23
1,1-Dichloroethene	0.19	J	10.0	10.1		ug/L		101	53 - 140	10	35
Ethylbenzene	1.0	U	10.0	11.0		ug/L		110	66 - 120	16	24
m-Xylene & p-Xylene	2.0	U	10.0	11.0		ug/L		110	63 - 121	13	25
o-Xylene	1.0	U	10.0	11.3		ug/L		113	69 - 120	16	25
Tetrachloroethene	0.22	J	10.0	10.1		ug/L		99	51 - 136	12	23
Toluene	1.0	U	10.0	11.0		ug/L		110	62 - 132	13	23
trans-1,2-Dichloroethene	1.0	U	10.0	10.4		ug/L		104	68 - 133	9	24
1,1,1-Trichloroethane	2.2		10.0	11.1		ug/L		89	51 - 138	9	27
Trichloroethene	0.29	J	10.0	9.76		ug/L		95	55 - 131	11	23
Vinyl chloride	1.0	U	10.0	8.45		ug/L		84	43 - 154	6	29
Xylenes, Total	2.0	U	20.0	22.3		ug/L		112	67 - 120	15	25
Chloroethane	1.0	U	10.0	7.23		ug/L		72	11 - 189	14	35

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*104*		*59 - 120*
Dibromofluoromethane (Surr)	*93*		*75 - 128*
1,2-Dichloroethane-d4 (Surr)	*82*		*70 - 121*
Toluene-d8 (Surr)	*108*		*70 - 123*

Method: 8260B - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-391823/7
Matrix: Water
Analysis Batch: 391823

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	1.0	U	1.0	0.13	ug/L			07/18/19 14:42	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.16	ug/L			07/18/19 14:42	1
1,1-Dichloroethane	1.0	U	1.0	0.17	ug/L			07/18/19 14:42	1
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L			07/18/19 14:42	1
Ethylbenzene	1.0	U	1.0	0.11	ug/L			07/18/19 14:42	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			07/18/19 14:42	1
Toluene	1.0	U	1.0	0.14	ug/L			07/18/19 14:42	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			07/18/19 14:42	1
1,1,1-Trichloroethane	1.0	U	1.0	0.24	ug/L			07/18/19 14:42	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			07/18/19 14:42	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			07/18/19 14:42	1
Xylenes, Total	2.0	U	2.0	0.15	ug/L			07/18/19 14:42	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*82*		*59 - 120*		*07/18/19 14:42*	*1*
Dibromofluoromethane (Surr)	*103*		*75 - 128*		*07/18/19 14:42*	*1*
1,2-Dichloroethane-d4 (Surr)	*98*		*70 - 121*		*07/18/19 14:42*	*1*
Toluene-d8 (Surr)	*102*		*70 - 123*		*07/18/19 14:42*	*1*

Lab Sample ID: LCS 240-391823/4
Matrix: Water
Analysis Batch: 391823

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Benzene	10.0	10.2		ug/L		102	80 - 123
cis-1,2-Dichloroethene	10.0	10.2		ug/L		102	76 - 128
1,1-Dichloroethane	10.0	9.72		ug/L		97	75 - 133
1,1-Dichloroethene	10.0	9.78		ug/L		98	65 - 139
Ethylbenzene	10.0	11.1		ug/L		111	80 - 120
m-Xylene & p-Xylene	10.0	10.9		ug/L		109	80 - 120
o-Xylene	10.0	11.2		ug/L		112	80 - 120
Tetrachloroethene	10.0	9.85		ug/L		98	74 - 130
Toluene	10.0	11.1		ug/L		111	78 - 129
trans-1,2-Dichloroethene	10.0	10.6		ug/L		106	78 - 133
1,1,1-Trichloroethane	10.0	9.06		ug/L		91	69 - 134
Trichloroethene	10.0	9.81		ug/L		98	76 - 125
Vinyl chloride	10.0	8.51		ug/L		85	58 - 143
Xylenes, Total	20.0	22.1		ug/L		111	80 - 120
Chloroethane	10.0	7.48		ug/L		75	33 - 173

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*102*		*59 - 120*
Dibromofluoromethane (Surr)	*95*		*75 - 128*
1,2-Dichloroethane-d4 (Surr)	*82*		*70 - 121*
Toluene-d8 (Surr)	*109*		*70 - 123*

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: MB 240-391986/6
Matrix: Water
Analysis Batch: 391986

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	1.0	U	1.0	0.13	ug/L			07/19/19 10:57	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.16	ug/L			07/19/19 10:57	1
1,1-Dichloroethane	1.0	U	1.0	0.17	ug/L			07/19/19 10:57	1
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L			07/19/19 10:57	1
Ethylbenzene	1.0	U	1.0	0.11	ug/L			07/19/19 10:57	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			07/19/19 10:57	1
Toluene	1.0	U	1.0	0.14	ug/L			07/19/19 10:57	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			07/19/19 10:57	1
1,1,1-Trichloroethane	1.0	U	1.0	0.24	ug/L			07/19/19 10:57	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			07/19/19 10:57	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			07/19/19 10:57	1
Xylenes, Total	2.0	U	2.0	0.15	ug/L			07/19/19 10:57	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*97*		*59 - 120*		*07/19/19 10:57*	*1*
Dibromofluoromethane (Surr)	*107*		*75 - 128*		*07/19/19 10:57*	*1*
1,2-Dichloroethane-d4 (Surr)	*104*		*70 - 121*		*07/19/19 10:57*	*1*
Toluene-d8 (Surr)	*102*		*70 - 123*		*07/19/19 10:57*	*1*

Lab Sample ID: LCS 240-391986/4
Matrix: Water
Analysis Batch: 391986

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Benzene	10.0	9.88		ug/L		99	80 - 123
cis-1,2-Dichloroethene	10.0	9.61		ug/L		96	76 - 128
1,1-Dichloroethane	10.0	9.35		ug/L		94	75 - 133
1,1-Dichloroethene	10.0	10.8		ug/L		108	65 - 139
Ethylbenzene	10.0	10.0		ug/L		100	80 - 120
m-Xylene & p-Xylene	10.0	10.2		ug/L		102	80 - 120
o-Xylene	10.0	9.73		ug/L		97	80 - 120
Tetrachloroethene	10.0	9.91		ug/L		99	74 - 130
Toluene	10.0	10.3		ug/L		103	78 - 129
trans-1,2-Dichloroethene	10.0	10.2		ug/L		102	78 - 133
1,1,1-Trichloroethane	10.0	9.64		ug/L		96	69 - 134
Trichloroethene	10.0	8.95		ug/L		89	76 - 125
Vinyl chloride	10.0	10.1		ug/L		101	58 - 143
Xylenes, Total	20.0	19.9		ug/L		100	80 - 120
Chloroethane	10.0	11.2		ug/L		112	33 - 173

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*112*		*59 - 120*
Dibromofluoromethane (Surr)	*98*		*75 - 128*
1,2-Dichloroethane-d4 (Surr)	*93*		*70 - 121*
Toluene-d8 (Surr)	*104*		*70 - 123*

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: MB 240-392512/7
Matrix: Water
Analysis Batch: 392512

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	1.0	U	1.0	0.13	ug/L			07/23/19 15:25	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.16	ug/L			07/23/19 15:25	1
1,1-Dichloroethane	1.0	U	1.0	0.17	ug/L			07/23/19 15:25	1
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L			07/23/19 15:25	1
Ethylbenzene	1.0	U	1.0	0.11	ug/L			07/23/19 15:25	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			07/23/19 15:25	1
Toluene	1.0	U	1.0	0.14	ug/L			07/23/19 15:25	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			07/23/19 15:25	1
1,1,1-Trichloroethane	1.0	U	1.0	0.24	ug/L			07/23/19 15:25	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			07/23/19 15:25	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			07/23/19 15:25	1
Xylenes, Total	2.0	U	2.0	0.15	ug/L			07/23/19 15:25	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*83*		*59 - 120*		*07/23/19 15:25*	*1*
Dibromofluoromethane (Surr)	*107*		*75 - 128*		*07/23/19 15:25*	*1*
1,2-Dichloroethane-d4 (Surr)	*98*		*70 - 121*		*07/23/19 15:25*	*1*
Toluene-d8 (Surr)	*101*		*70 - 123*		*07/23/19 15:25*	*1*

Lab Sample ID: LCS 240-392512/4
Matrix: Water
Analysis Batch: 392512

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Benzene	10.0	10.5		ug/L		105	80 - 123
cis-1,2-Dichloroethene	10.0	10.3		ug/L		103	76 - 128
1,1-Dichloroethane	10.0	9.94		ug/L		99	75 - 133
1,1-Dichloroethene	10.0	10.4		ug/L		104	65 - 139
Ethylbenzene	10.0	11.1		ug/L		111	80 - 120
m-Xylene & p-Xylene	10.0	10.9		ug/L		109	80 - 120
o-Xylene	10.0	11.2		ug/L		112	80 - 120
Tetrachloroethene	10.0	9.47		ug/L		95	74 - 130
Toluene	10.0	10.8		ug/L		108	78 - 129
trans-1,2-Dichloroethene	10.0	10.8		ug/L		108	78 - 133
1,1,1-Trichloroethane	10.0	9.48		ug/L		95	69 - 134
Trichloroethene	10.0	9.68		ug/L		97	76 - 125
Vinyl chloride	10.0	7.99		ug/L		80	58 - 143
Xylenes, Total	20.0	22.1		ug/L		111	80 - 120
Chloroethane	10.0	6.26		ug/L		63	33 - 173

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*103*		*59 - 120*
Dibromofluoromethane (Surr)	*95*		*75 - 128*
1,2-Dichloroethane-d4 (Surr)	*86*		*70 - 121*
Toluene-d8 (Surr)	*106*		*70 - 123*

GC/MS VOA

Analysis Batch: 391370

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-115711-1	W-4-S/070919/	Total/NA	Water	8260B	
MB 240-391370/6	Method Blank	Total/NA	Water	8260B	
LCS 240-391370/4	Lab Control Sample	Total/NA	Water	8260B	

Analysis Batch: 391599

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-115711-2	W-3-S/070919/	Total/NA	Water	8260B	
240-115711-3	W-2-S/070919/	Total/NA	Water	8260B	
240-115711-10	EB-2/071019/	Total/NA	Water	8260B	
240-115711-11	HR-4/070919/	Total/NA	Water	8260B	
240-115711-12	W-2-N/070919/	Total/NA	Water	8260B	
240-115711-13	W-3-N/070919/	Total/NA	Water	8260B	
240-115711-14	W-4-N/070919/	Total/NA	Water	8260B	
240-115711-15	EB-1/071019/	Total/NA	Water	8260B	
240-115711-22	TRIP BLANK	Total/NA	Water	8260B	
240-115711-23	EB-1/071119/	Total/NA	Water	8260B	
MB 240-391599/7	Method Blank	Total/NA	Water	8260B	
LCS 240-391599/4	Lab Control Sample	Total/NA	Water	8260B	
240-115711-11 MS	HR-4/070919/	Total/NA	Water	8260B	
240-115711-11 MSD	HR-4/070919/	Total/NA	Water	8260B	

Analysis Batch: 391823

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-115711-2	W-3-S/070919/	Total/NA	Water	8260B	
240-115711-4	GM-50/071019/	Total/NA	Water	8260B	
240-115711-5	GM-47/071019/	Total/NA	Water	8260B	
240-115711-6	GM-51/071019/	Total/NA	Water	8260B	
240-115711-7	GM-49/071019/	Total/NA	Water	8260B	
240-115711-8	GM-52/071019/	Total/NA	Water	8260B	
240-115711-9	GM-48/071019/	Total/NA	Water	8260B	
240-115711-16	GM-63/071019/	Total/NA	Water	8260B	
240-115711-17	GM-64/071019/	Total/NA	Water	8260B	
240-115711-18	RMW-98/071019/	Total/NA	Water	8260B	
240-115711-19	RMW-99/071019/	Total/NA	Water	8260B	
240-115711-20	WSV-23/071019/	Total/NA	Water	8260B	
240-115711-21	DUP-1/070919/	Total/NA	Water	8260B	
MB 240-391823/7	Method Blank	Total/NA	Water	8260B	
LCS 240-391823/4	Lab Control Sample	Total/NA	Water	8260B	

Analysis Batch: 391986

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-115711-1	W-4-S/070919/	Total/NA	Water	8260B	
MB 240-391986/6	Method Blank	Total/NA	Water	8260B	
LCS 240-391986/4	Lab Control Sample	Total/NA	Water	8260B	

Analysis Batch: 392512

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-115711-6	GM-51/071019/	Total/NA	Water	8260B	
240-115711-17	GM-64/071019/	Total/NA	Water	8260B	
240-115711-18	RMW-98/071019/	Total/NA	Water	8260B	
240-115711-19	RMW-99/071019/	Total/NA	Water	8260B	

GC/MS VOA (Continued)

Analysis Batch: 392512 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 240-392512/7	Method Blank	Total/NA	Water	8260B	
LCS 240-392512/4	Lab Control Sample	Total/NA	Water	8260B	

Client Sample ID: W-4-S/070919/ — Lab Sample ID: 240-115711-1

Date Collected: 07/09/19 13:40 — **Matrix: Water**
Date Received: 07/12/19 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	391370	07/16/19 18:51	LEE	TAL CAN
Total/NA	Analysis	8260B		3.33	391986	07/19/19 12:27	LEE	TAL CAN

Client Sample ID: W-3-S/070919/ — Lab Sample ID: 240-115711-2

Date Collected: 07/09/19 15:20 — **Matrix: Water**
Date Received: 07/12/19 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	391599	07/17/19 17:28	LRW	TAL CAN
Total/NA	Analysis	8260B		5	391823	07/18/19 15:30	LRW	TAL CAN

Client Sample ID: W-2-S/070919/ — Lab Sample ID: 240-115711-3

Date Collected: 07/09/19 16:30 — **Matrix: Water**
Date Received: 07/12/19 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	391599	07/17/19 17:52	LRW	TAL CAN

Client Sample ID: GM-50/071019/ — Lab Sample ID: 240-115711-4

Date Collected: 07/10/19 08:30 — **Matrix: Water**
Date Received: 07/12/19 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	391823	07/18/19 15:53	LRW	TAL CAN

Client Sample ID: GM-47/071019/ — Lab Sample ID: 240-115711-5

Date Collected: 07/10/19 09:35 — **Matrix: Water**
Date Received: 07/12/19 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	391823	07/18/19 16:17	LRW	TAL CAN

Client Sample ID: GM-51/071019/ — Lab Sample ID: 240-115711-6

Date Collected: 07/10/19 11:55 — **Matrix: Water**
Date Received: 07/12/19 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	391823	07/18/19 16:41	LRW	TAL CAN
Total/NA	Analysis	8260B		2	392512	07/23/19 15:48	LRW	TAL CAN

Client Sample ID: GM-49/071019/ — Lab Sample ID: 240-115711-7

Date Collected: 07/10/19 14:50 — **Matrix: Water**
Date Received: 07/12/19 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	391823	07/18/19 17:05	LRW	TAL CAN

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Racer Moraine

Job ID: 240-115711-1

Client Sample ID: GM-52/071019/ — Lab Sample ID: 240-115711-8

Date Collected: 07/10/19 16:00 — **Matrix: Water**
Date Received: 07/12/19 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	391823	07/18/19 17:29	LRW	TAL CAN

Client Sample ID: GM-48/071019/ — Lab Sample ID: 240-115711-9

Date Collected: 07/10/19 12:55 — **Matrix: Water**
Date Received: 07/12/19 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	391823	07/18/19 17:53	LRW	TAL CAN

Client Sample ID: EB-2/071019/ — Lab Sample ID: 240-115711-10

Date Collected: 07/10/19 17:00 — **Matrix: Water**
Date Received: 07/12/19 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	391599	07/17/19 18:16	LRW	TAL CAN

Client Sample ID: HR-4/070919/ — Lab Sample ID: 240-115711-11

Date Collected: 07/09/19 13:35 — **Matrix: Water**
Date Received: 07/12/19 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	391599	07/17/19 18:40	LRW	TAL CAN

Client Sample ID: W-2-N/070919/ — Lab Sample ID: 240-115711-12

Date Collected: 07/09/19 15:50 — **Matrix: Water**
Date Received: 07/12/19 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	391599	07/17/19 19:51	LRW	TAL CAN

Client Sample ID: W-3-N/070919/ — Lab Sample ID: 240-115711-13

Date Collected: 07/09/19 20:35 — **Matrix: Water**
Date Received: 07/12/19 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	391599	07/17/19 20:15	LRW	TAL CAN

Client Sample ID: W-4-N/070919/ — Lab Sample ID: 240-115711-14

Date Collected: 07/09/19 18:15 — **Matrix: Water**
Date Received: 07/12/19 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	391599	07/17/19 20:39	LRW	TAL CAN

Client Sample ID: EB-1/071019/ — Lab Sample ID: 240-115711-15

Date Collected: 07/10/19 07:30 — **Matrix: Water**
Date Received: 07/12/19 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	391599	07/17/19 21:03	LRW	TAL CAN

Client Sample ID: GM-63/071019/ — Lab Sample ID: 240-115711-16

Date Collected: 07/10/19 11:50 — **Matrix: Water**
Date Received: 07/12/19 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	391823	07/18/19 18:17	LRW	TAL CAN

Client Sample ID: GM-64/071019/ — Lab Sample ID: 240-115711-17

Date Collected: 07/10/19 09:25 — **Matrix: Water**
Date Received: 07/12/19 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	391823	07/18/19 18:40	LRW	TAL CAN
Total/NA	Analysis	8260B		1.67	392512	07/23/19 16:12	LRW	TAL CAN

Client Sample ID: RMW-98/071019/ — Lab Sample ID: 240-115711-18

Date Collected: 07/10/19 18:40 — **Matrix: Water**
Date Received: 07/12/19 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	391823	07/18/19 19:04	LRW	TAL CAN
Total/NA	Analysis	8260B		1.67	392512	07/23/19 16:36	LRW	TAL CAN

Client Sample ID: RMW-99/071019/ — Lab Sample ID: 240-115711-19

Date Collected: 07/10/19 17:05 — **Matrix: Water**
Date Received: 07/12/19 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	391823	07/18/19 19:28	LRW	TAL CAN
Total/NA	Analysis	8260B		1.67	392512	07/23/19 17:00	LRW	TAL CAN

Client Sample ID: WSV-23/071019/ — Lab Sample ID: 240-115711-20

Date Collected: 07/10/19 14:20 — **Matrix: Water**
Date Received: 07/12/19 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	391823	07/18/19 19:52	LRW	TAL CAN

Client Sample ID: DUP-1/070919/ — Lab Sample ID: 240-115711-21

Date Collected: 07/09/19 00:00 — **Matrix: Water**
Date Received: 07/12/19 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	391823	07/18/19 20:16	LRW	TAL CAN

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Racer Moraine

Job ID: 240-115711-1

Client Sample ID: TRIP BLANK

Lab Sample ID: 240-115711-22

Date Collected: 07/11/19 08:20

Matrix: Water

Date Received: 07/12/19 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	391599	07/17/19 21:26	LRW	TAL CAN

Client Sample ID: EB-1/071119/

Lab Sample ID: 240-115711-23

Date Collected: 07/11/19 08:20

Matrix: Water

Date Received: 07/12/19 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	391599	07/17/19 21:50	LRW	TAL CAN

Laboratory References:

TAL CAN = Eurofins TestAmerica, Canton, 4101 Shuffel Street NW, North Canton, OH 44720, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Racer Moraine

Job ID: 240-115711-1

Laboratory: Eurofins TestAmerica, Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
California	State		2927	02-23-20
California	State Program	9	2927	02-23-20
Connecticut	State Program	1	PH-0590	12-31-19
Florida	NELAP	4	E87225	06-30-20
Florida	NELAP		E87225	06-30-20
Illinois	NELAP	5	200004	07-31-19 *
Illinois	NELAP		004498	07-31-19
Iowa	State Program	7	421	06-01-21
Kansas	NELAP	7	E-10336	04-30-20
Kentucky (UST)	State Program	4	58	02-23-20
Kentucky (WW)	State Program	4	98016	12-31-19
Minnesota	NELAP	5	039-999-348	12-31-19 *
Minnesota (Petrofund)	State Program	1	3506	07-31-19 *
Nevada	State		OH00048	07-31-19
Nevada	State Program	9	OH00048	07-31-19
New Jersey	NELAP	2	OH001	06-30-20
New Jersey	NELAP		OH001	06-30-20
New York	NELAP	2	10975	03-31-20
New York	NELAP		10975	03-31-20
Ohio VAP	State Program	5	CL0024	06-05-21
Oregon	NELAP	10	4062	02-23-20
Oregon	NELAP		4062	02-23-20
Pennsylvania	NELAP	3	68-00340	08-31-19 *
Pennsylvania	NELAP		68-00340	08-31-19
Texas	NELAP	6	T104704517-18-10	08-31-19 *
Texas	NELAP		T104704517-18-10	08-31-19
USDA	Federal		P330-16-00404	12-28-19
Virginia	NELAP	3	460175	09-14-19 *
Virginia	NELAP		010101	09-14-19
Washington	State		C971	01-12-20
Washington	State Program	10	C971	01-12-20 *
West Virginia DEP	State		210	12-31-19
West Virginia DEP	State Program	3	210	12-31-19

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Eurofins TestAmerica, Canton
4101 Shuffel Street NW
North Canton, OH 44720
Phone: 330-497-9396 Fax: 330-497-0772

~~Columbus~~ 1.2/C1.9
~~209~~

Chain of Custody Record

eurofins | Environment Testing TestAmerica

Client Information	Sampler: Alex Van Clearburg	Lab PM: DelMonico, Michael	Carrier Tracking No(s):	COC No: 240-62293-26457.2
Client Contact: Kari Eldridge	Phone: 614-634-0722	E-Mail: michael.delmonico@testamericainc.com		Page: Page 2 of 8
Company: ARCADIS U.S., Inc				Job #:
Address: 4665 Cornell Road Suite 200	Due Date Requested:			
City: Cincinnati	TAT Requested (days):			
State, Zip: OH, 45241				
Phone:	PO #: OH000294.2019.0004B			
Email: kari.eldridge@arcadis-us.com	WO #: Project #: OH000294.2018.0004B			
Project Name: Racer Moraine	Project #: 24006917			
Site:	SSOW#:			

Analysis Requested

Preservation Codes:

A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA, M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - pH 4-5, Z - other (specify)

240-115711 Chain of Custody

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	8260B - (MOD) Custom Sublist	9060 - TOC	9251 - Local Method	300.0_28D - Sulfate	6010B - (MOD) Custom Sublist	SM4500_S2_F - (MOD) Local Method	6010B - Fe-Mn - FF	BTS	Total	Note:
			Preservation Code:				A	S	N	N	D	CB	D			
W-4-S /070919/	07/09/19	13:40	G	Water			4								4	extra 10x dilution
W-3-S /070919/	07/09/19	15:20	G	Water			3								3	
W-2-S /070919/	07/09/19	16:30	G	Water			3								3	
GM-50 /071019/	07/10/19	09:30	G	Water			3								3	
GM-47 /071019/	07/10/19	09:35	G	Water			3								3	
GM-51 /071019/	07/10/19	11:55	G	Water			3								3	
GM-49 /071019/	07/10/19	14:50	G	Water			3								3	
GM-52 /071019/	07/10/19	16:00	G	Water			3								3	
GM-48 /071019/	07/10/19	12:55	G	Water			3								3	
EB-2 /071019/	07/10/19	17:00	G	Water			3								3	
				Water			3									

210 Dayton

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months

Deliverable Requested: I, II, III, IV, Other (specify)

Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

	Relinquished by	Date/Time	Company	Received by	Date/Time	Company
1	Alex Van Clay	07/11/19 0830	Arcadis		7-11-19 1400	ETA
2		7-11-19 1430	ETA		7/12/19 820	
3						

Custody Seals Intact: △ Yes △ No | Custody Seal No.:

Cooler Temperature(s) °C and Other Remarks:

Ver: 01/16/2019

Eurofins TestAmerica, Canton
4101 Shuffel Street NW
North Canton, OH 44720
Phone: 330-497-9396 Fax: 330-497-0772

~~Columbus~~
~~209~~

Chain of Custody Record

eurofins | Environment Testing TestAmerica

Client Information	Sampler: S CLARK	Lab PM: DelMonico, Michael	Carrier Tracking No(s):	COC No: 240-62293-26457.4
Client Contact: Kari Eldridge	Phone: 6149402210	E-Mail: michael.delmonico@testamericainc.com		Page: Page 4 of 8
Company: ARCADIS U.S., Inc				Job #:
Address: 4665 Cornell Road Suite 200	Due Date Requested:			
City: Cincinnati	TAT Requested (days):			
State, Zip: OH, 45241				
Phone:	PO #: OH000294.2019.0004B			
Email: kari.eldridge@arcadis-us.com	WO #: Project #: OH000294.2018.0004B			
Project Name: Racer Moraine	Project #: 24006917			
Site:	SSOW#:			

Analysis Requested

Preservation Codes:

A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA, M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - pH 4-5, Z - other (specify)

Other:

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	8260B - (MOD) Custom Sublist	9060 - TOC	9251 - Local Method	300.0_28D - Sulfate	6010B - (MOD) Custom Sublist	SM4500_S2_F - (MOD) Local Method	6010B - Fe-Mn - FF	Total Number of containers	Special Instructions/Note:
			Preservation Code:				A	S	N	N	D	CB	D		
HR-4/070919/	070919	1335	G	Water			3							3	
W-2-N/070919/	070919	1550	G	Water			3							3	
W-3-N/070919/	070919	2035	G	Water			3							3	
W-4-N/070919/	070919	1815	G	Water			3							3	
HR-4/070919/MS/MSD	070919	1335	G	Water			6							6	
EB-1/071019/	071019	0730	G	Water			3							3	
GM-63/071019/	071019	1150	G	Water			3							3	
GM-64/071019/	071019	0925	G	Water			3							3	
RMW-98/071019/	071019	1840	G	Water			3							3	
RMW-99/071019/	071019	1705	G	Water			3							3	
WSW-23/071019/	071019	1420	G	Water			4							4	+1 VOA FOR 10X DILUTION

210
Dayton

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months

Deliverable Requested: I, II, III, IV, Other (specify)

Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:				
Relinquished by: Stuart Clark	Date/Time: 071119 0830	Company: ARCADIS	Received by: Teresa Davis	Date/Time: 7-11-19	Company: EHA		
Relinquished by:	Date/Time: 7-11-19 14:30	Company: EHA	Received by:	Date/Time: 7/12/19 800	Company: TA		
Relinquished by:	Date/Time:	Company:	Received by:	Date/Time:	Company:		

Custody Seals Intact: Δ Yes Δ No | Custody Seal No.:

Cooler Temperature(s) °C and Other Remarks:

Ver: 01/16/2019

Eurofins TestAmerica, Canton
4101 Shuffel Street NW
North Canton, OH 44720
Phone: 330-497-9396 Fax: 330-497-0772

~~Columbus~~ ~~209~~

Chain of Custody Record

eurofins Environment Testing TestAmerica

Client Information	Sampler: S CLARK	Lab PM: DelMonico, Michael	Carrier Tracking No(s):	COC No: 240-62293-26457.5
Client Contact: Kari Eldridge	Phone: 6149402210	E-Mail: michael.delmonico@testamericainc.com		Page: Page 5 of 8
Company: ARCADIS U.S., Inc				Job #:

Address: 4665 Cornell Road Suite 200	Due Date Requested:
City: Cincinnati	TAT Requested (days):
State, Zip: OH, 45241	
Phone:	PO #: OH000294.2019.0004B
Email: kari.eldridge@arcadis-us.com	WO #: Project #: OH000294.2018.0004B
Project Name: Racer Moraine	Project #: 24006917
Site:	SSOW#:

Analysis Requested

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	8260B - (MOD) Custom Sublist	9060 - TOC	9251 - Local Method	300.0_28D - Sulfate	6010B - (MOD) Custom Sublist	SM4500_S2_F - (MOD) Local Method	6010B - Fe-Mn - FF	Total Number of containers	Special Instructions/Note:
			Preservation Code:				A	S	N	N	D	CB	D		
DUP-1/070919/	0709A			Water			3							3	
TRIP BLANK	071119	0820		Water			3							3	
EB-1/071119/	071119	0820		Water			3							3	
				Water											
				Water											
				Water											
				Water											
				Water											
				Water											
				Water											
				Water											

210 Dayton

Preservation Codes:

A - HCL	M - Hexane
B - NaOH	N - None
C - Zn Acetate	O - AsNaO2
D - Nitric Acid	P - Na2O4S
E - NaHSO4	Q - Na2SO3
F - MeOH	R - Na2S2O3
G - Amchlor	S - H2SO4
H - Ascorbic Acid	T - TSP Dodecahydrate
I - Ice	U - Acetone
J - DI Water	V - MCAA
K - EDTA	W - pH 4-5
L - EDA	Z - other (specify)

Other:

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months

Deliverable Requested: I, II, III, IV, Other (specify)

Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

	Relinquished by	Date/Time	Company	Received by	Date/Time	Company
1		071119 0830	ARCADIS		7-11-19 14:00	ETA
2		7-11-19 14:30	ETA		7/12/19 800	
3						

Custody Seals Intact: Δ Yes Δ No | Custody Seal No.:

Cooler Temperature(s) °C and Other Remarks:

Ver: 01/16/2019

Eurofins TestAmerica Canton Sample Receipt Form/Narrative **Login # :** 115711
Canton Facility

Client Heads Site Name

Cooler unpacked by: SC

Cooler Received on 7/12/19 Opened on 7/12/19

FedEx: 1st Grd Exp UPS FAS Clipper Client Drop Off TestAmerica Courier Other

Receipt After-hours: Drop-off Date/Time Storage Location

TestAmerica Cooler # TA Foam Box Client Cooler Box Other

Packing material used: Bubble Wrap Foam Plastic Bag None Other

COOLANT: Wet Ice Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☐ See Multiple Cooler Form
   IR GUN# IR-8 (CF **+0.1** °C) Observed Cooler Temp. 1.8 °C Corrected Cooler Temp. 1.9 °C
   IR GUN #36 (CF **+0.6**°C) Observed Cooler Temp. ____ °C Corrected Cooler Temp. ____ °C
2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1 Yes No
   -Were the seals on the outside of the cooler(s) signed & dated? Yes No NA
   -Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)? Yes No
   -Were tamper/custody seals intact and uncompromised? Yes No NA
3. Shippers' packing slip attached to the cooler(s)? Yes No
4. Did custody papers accompany the sample(s)? Yes No
5. Were the custody papers relinquished & signed in the appropriate place? Yes No
6. Was/were the person(s) who collected the samples clearly identified on the COC? Yes No
7. Did all bottles arrive in good condition (Unbroken)? Yes No
8. Could all bottle labels be reconciled with the COC? Yes No
9. Were correct bottle(s) used for the test(s) indicated? Yes No
10. Sufficient quantity received to perform indicated analyses? Yes No
11. Are these work share samples? Yes No
    If yes, Questions 12-16 have been checked at the originating laboratory.
12. Were all preserved sample(s) at the correct pH upon receipt? Yes No NA pH Strip Lot# **HC984738**
13. Were VOAs on the COC? Yes No
14. Were air bubbles >6 mm in any VOA vials? ● ⬅ Larger than this. Yes No NA
15. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # N/A Yes No
16. Was a LL Hg or Me Hg trip blank present? ____ Yes No

Tests that are not checked for pH by Receiving:

VOAs
Oil and Grease
TOC

Contacted PM ____ Date ____ by ____ via Verbal Voice Mail Other

Concerning ____

17. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES

Samples processed by: RC

18. SAMPLE CONDITION

Sample(s) ____ were received after the recommended holding time had expired.
Sample(s) ____ were received in a broken container.
Sample(s) ____ were received with bubble >6 mm in diameter. (Notify PM)

19. SAMPLE PRESERVATION

Sample(s) ____ were further preserved in the laboratory.
Time preserved: ____ Preservative(s) added/Lot number(s): ____

VOA Sample Preservation - Date/Time VOAs Frozen: ____

WI-NC-099

APPENDIX F

DN-13 Pumping Well Operation and Maintenance for 2019

DN-13 Operation and Maintenance

Background

Extraction well DN-13 is a lower aquifer extraction well that is owned by Montgomery County and operated by Montgomery County and RACER Trust. Well DN-13 was part of the former Greater Moraine Water System located in the former North Dryden Road well field. The well has been used in a Pump-to-Waste Program since March 1990 in cooperation with former GM Corporation/MLC until March 31, 2011 and has continued operation since that time in cooperation with the RACER Trust.

The interim measure for the lower aquifer at the Site consists of continued pumping of DN-13 to capture impacted groundwater. The outfall for DN-13 discharges to the Great Miami River and, as required by the NPDES permit regulated by the Ohio EPA, monthly sampling is performed at the outfall to monitor water quality along with the discharge flow rate collected at the well head. Additional information regarding DN-13 capture can be found in Section 3.2 of the main report.

Per the operation and maintenance (O&M) plan, defined in the Extraction Well DN-13 Operation and Maintenance Memorandum (Arcadis, Inc. 2015a) and the RACER Trust Moraine Facilities: Extraction Well DN-13 Operation and Maintenance Status (Arcadis, Inc. 2015b), data collected monthly since April 2015 is used to evaluate and maintain the performance of extraction well DN-13 and includes the following:

1. Date and time of measurements
2. Electric motor power consumption
3. Flow meter readings (totalizer)
4. Flow control valve setting
5. Wellhead pressure
6. Water-level measurements including both manual depth-to-water measurements during pumping and high frequency water-level data from the pressure transducers deployed in well DN-13 and monitoring wells GM-14 (up-gradient) and manual water levels at GM-19D (up-gradient).

The objective of the data collection and subsequent analysis is to recognize, in a timely manner, indications of deteriorating pump/motor and/or fouling/encrustation of the well screen through evaluation of specific performance criteria that will prompt appropriate action.

Data is analyzed and summarized in quarterly progress reports submitted to the U.S. EPA and the Ohio EPA. As outlined in the RACER Trust Moraine Facilities: Extraction Well DN-13 Operation and Maintenance Status (Arcadis, Inc. 2015b), Arcadis indicated the following items would be reported in the Annual Site-Wide Groundwater Monitoring Report:

- An annual data summary
- Corresponding figures and tables
- An evaluation and recommendations regarding future data collection and/or corrective actions
- Documentation of O&M activities/actions performed during the reporting year

As part of this annual performance summary, DN-13 groundwater elevation data are shown graphically on **Figure F-1**, and specific capacity (SC) and average monthly flow rate data are shown on **Figure F-2**. Annual average flow rate data for the year is summarized in Section 2.5.1.1 of the main report.

As part of the quarterly evaluations in 2019, corrective actions were prompted and are summarized below:

First Quarter

Extraction well DN-13 was operational for 99.8% of the first quarter. Downtime was associated with a power outage occurring on February 20, 2019.

Specific capacity has had a slow rate of decline since the last re-development in May of 2017. Biofouling and scaling occur over time that decreases the well performance. On March 4, 2019, the flow rate was reduced to maintain a higher level of drawdown with respect to the pump depth.

Second Quarter

Extraction well DN-13 was operational for 95% of the second quarter. Downtime was associated with a power outage occurring from May 12 to 17, 2019.

Specific capacity continued to decline since the first quarter of 2019, In April 2019, additional flow rate adjustments were completed along with gate valve maintenance that improved the flow rate.

Third Quarter

Extraction well DN-13 was operational for 92% of the third quarter. Downtime was associated with a power outage occurring from August 6 to 13, 2019.

Flow rates and specific capacity continued to decline since the second quarter, and power consumption dropped by 4 gpm/kW, which indicated motor issues related to inefficiency.

Fourth Quarter

Extraction well DN-13 was operational for 66% of the fourth quarter. From October 7, 2019 through November 7, 2019, re-development and maintenance was performed by The Layne Christenson Company and included 1.) dismantling and inspection of pump motor and pump, 2.) video logging to assess downhole conditions both before and after re-development 3.) removal of biofouling and mineral scaling within the screen interval by physical agitation with water and nitrogen (bore blasting method) and application of a glycolic acid NW 310 solution.

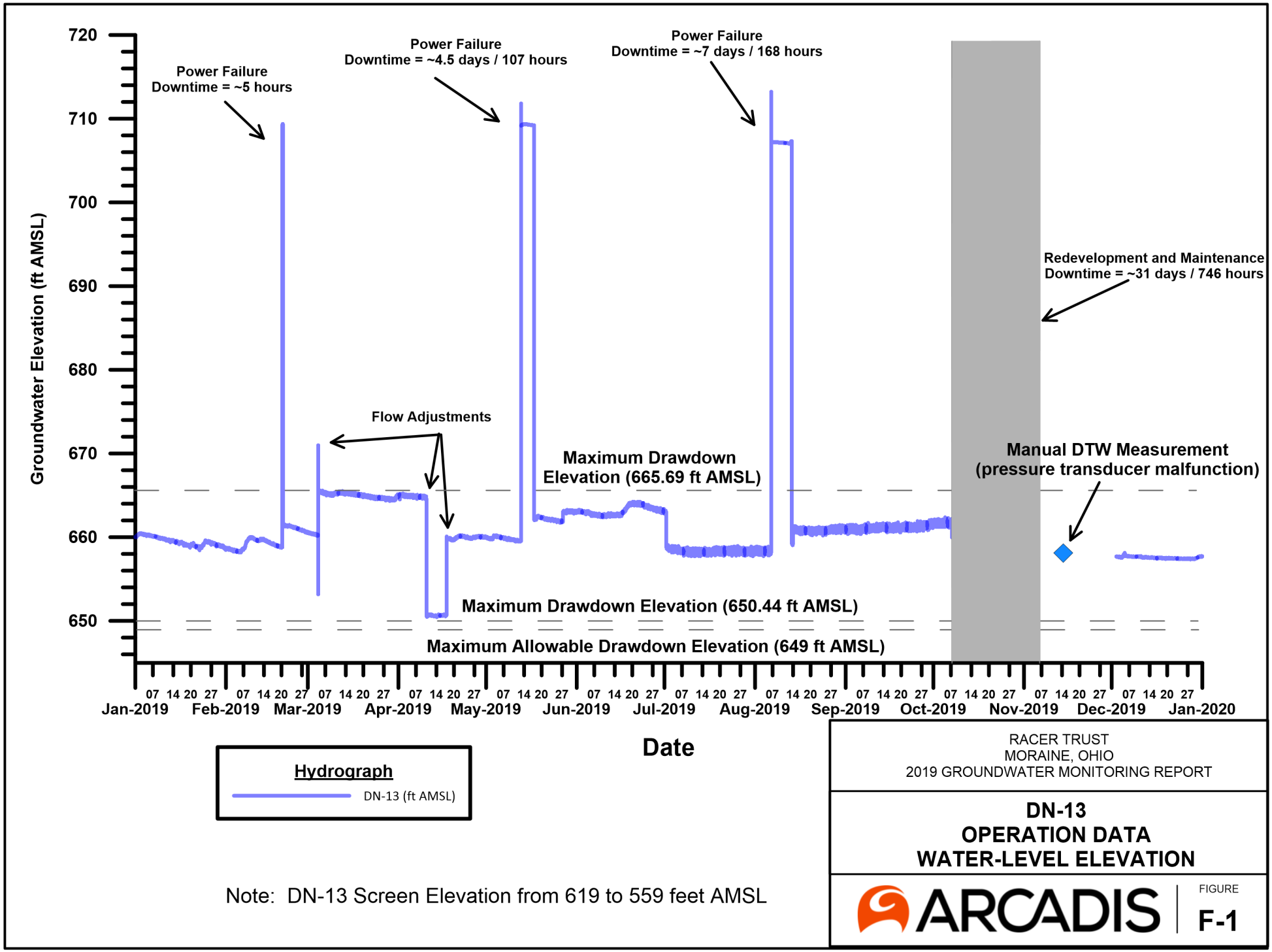
During inspection of the pump, a large crack was observed in the intermediate stage between the suction and discharge. The pump motor was also in need of maintenance. Both the pump and pump motor were refabricated and re-installed.

References

Arcadis, Inc. 2015a. Extraction Well DN-13 Operation and Maintenance Memorandum, RACER Trust, Moraine, Ohio. April 8, 2015.

Arcadis, Inc. 2015b. RACER Trust Moraine Facilities: Extraction Well DN-13 Operation and Maintenance Status, RACER Trust, Moraine, Ohio. September 24, 2015.

FIGURES



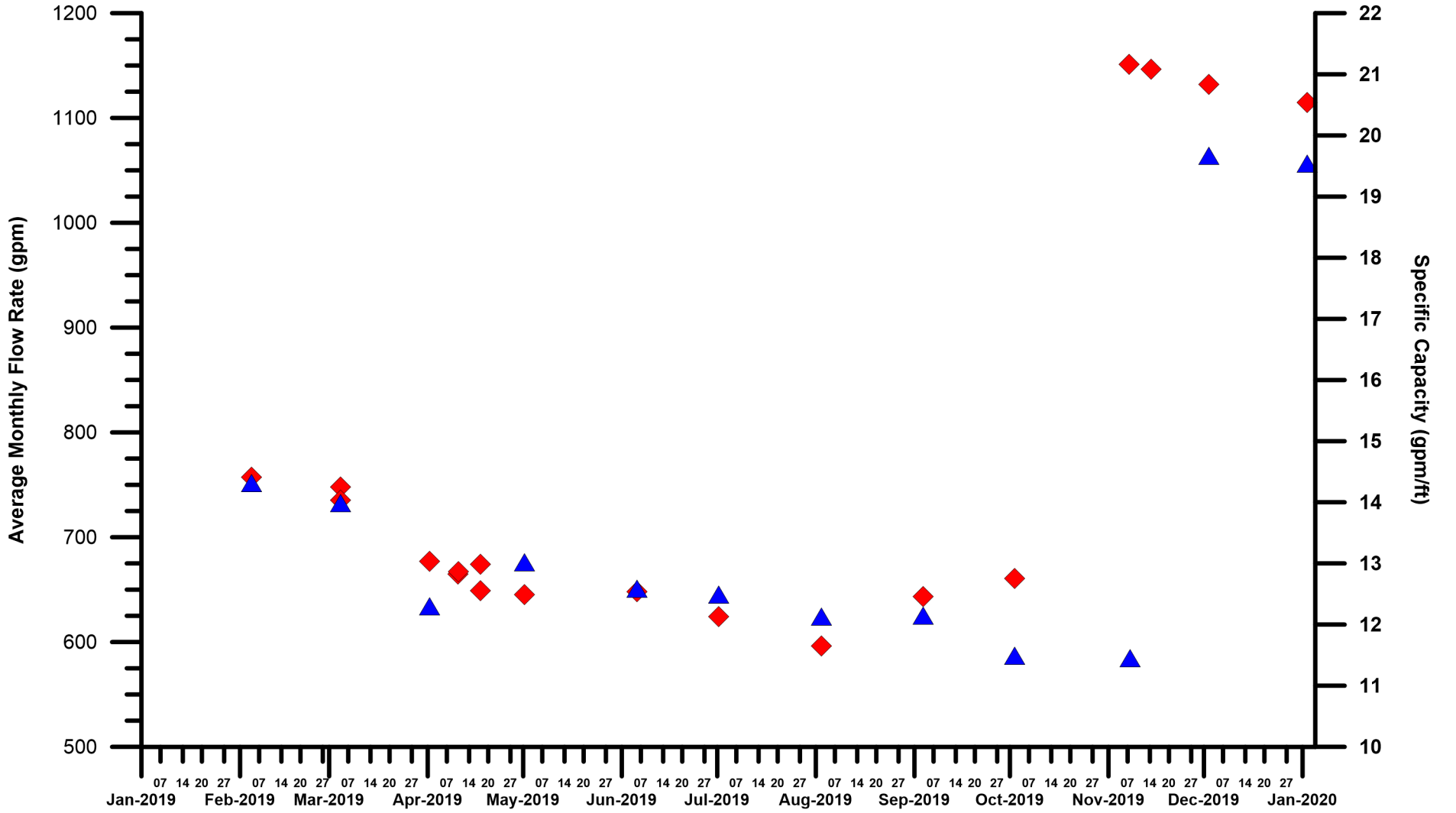
Note: DN-13 Screen Elevation from 619 to 559 feet AMSL

RACER TRUST
MORAINE, OHIO
2019 GROUNDWATER MONITORING REPORT

DN-13
OPERATION DATA
WATER-LEVEL ELEVATION

ARCADIS

FIGURE
F-1



DN-13 Flow Rate and Specific Capacity

- Specific Capacity (gpm/ft)
- Average Monthly Flow Rate (gpm)

Notes:
1. Specific Capacity in gallons per minute per foot (gpm/ft)
2. Flow Rate in gallons per minute (gpm)
3. Measurements are taken near the end or beginning of each reporting month

RACER TRUST
MORAINE, OHIO
2019 GROUNDWATER MONITORING REPORT

DN-13 OPERATION DATA FLOW RATE AND SPECIFIC CAPACITY

ARCADIS

FIGURE
F-2

APPENDIX G

Capture Zone Trends for 2019

Table G-1
Volatile Organic Constituent Sums Used in the Statistical Evaluation
RACER Trust Moraine Facilities
Moraine, Ohio

GM-09		GM-15		GM-20D	
Date	µg/L	Date	µg/L	Date	µg/L
9/24/1999	15.8	9/24/1999	10.8	9/24/1999	0
10/3/2000	18.4	10/2/2000	9.6	10/3/2000	20.1
11/14/2001	11.1	11/14/2001	7.5	11/14/2001	8.5
9/30/2002	18.1	9/27/2002	8.1	9/30/2002	5.1
9/24/2003	22.3	9/22/2003	9.2	9/22/2003	16.5
9/21/2004	18.7	9/20/2004	9.0	9/21/2004	14.9
10/26/2005	17.4	10/26/2005	9.3	10/26/2005	14.4
9/25/2006	8.4	9/18/2006	9.1	9/26/2006	13.6
9/19/2007	20.4	9/25/2007	7.7	9/19/2007	11.8
9/24/2008	19.2	9/30/2008	8.1	9/25/2008	9.7
NS	NS	11/13/2009	8.7	11/13/2009	10.0
9/22/2010	18.8	9/23/2010	8.7	9/22/2010	9.0
9/28/2011	14.5	9/29/2011	6.9	9/28/2011	7.2
9/26/2012	17.3	9/5/2012	10	9/5/2012	3.7
9/25/2013	20.8	9/25/2013	7.8	9/25/2013	6.9
10/6/2014	19.1	10/7/2014	8.8	10/6/2014	5.1
12/11/2015	13.2	11/4/2015	17.3	11/3/2015	4.1
8/17/2016	14.0	8/18/2016	18.0	8/19/2016	2.8
8/15/2017	12.8	8/16/2017	16.9	8/15/2017	3.2
7/24/2018	9.8	7/24/2018	15.5	7/24/2018	1.6
7/11/2019	6.5	7/8/2019	18.8	7/11/2019	0.85

ABBREVIATIONS:

µg/L = micrograms per liter

NS = Not sampled

NOTES:

1. All detected concentrations of individual VOC constituents were included in the sum.
2. Field duplicate results were not included.

Table G-2
Summary of Statistics and Trend Results
RACER Trust Moraine Facilities
Moraine, Ohio

Well ID	Analyte	Date Range (month/year)	Figure	n	Detected Results Summary (µg/L)				Mann-Kendall Test			Sen's Estimator of Slope	
					Range	Mean	SD	CV	Result	P-Value	S Value	Result	Slope (Units/Day)
Full Data Set													
GM-09	Total VOCs	09/99 - 07/19	G-1	20	6.5 - 22.3	15.8	4.4	0.28	NST	0.056	-50	NST	-0.000864
GM-15	Total VOCs	09/99 - 07/19	G-2	21	6.9 - 18.8	10.8	3.9	0.36	NST	0.058	53	NST	0.000718
GM-20D	Total VOCs	09/99 - 07/19	G-3	21	0 - 20.1	8.1	5.6	0.69	DWN	<0.001	-122	DWN	-0.00258
After July 2008													
GM-09	Total VOCs	09/08 - 07/19	G-4	11	6.5 - 20.8	15.1	4.4	0.29	DWN	0.003	-37	DWN	-0.00295
GM-15	Total VOCs	09/08 - 07/19	G-5	12	6.9 - 18.8	12.1	4.7	0.39	UP	0.005	39	UP	0.00271
GM-20D	Total VOCs	09/08 - 07/19	G-6	12	0.85 - 10	5.4	3.1	0.57	DWN	<0.001	-56	DWN	-0.00240

ABBREVIATIONS:

CV = coefficient of variation
ID = identification
mean = arithmetic mean
n = sample size
SD = standard deviation
VOC =volatile organic compounds

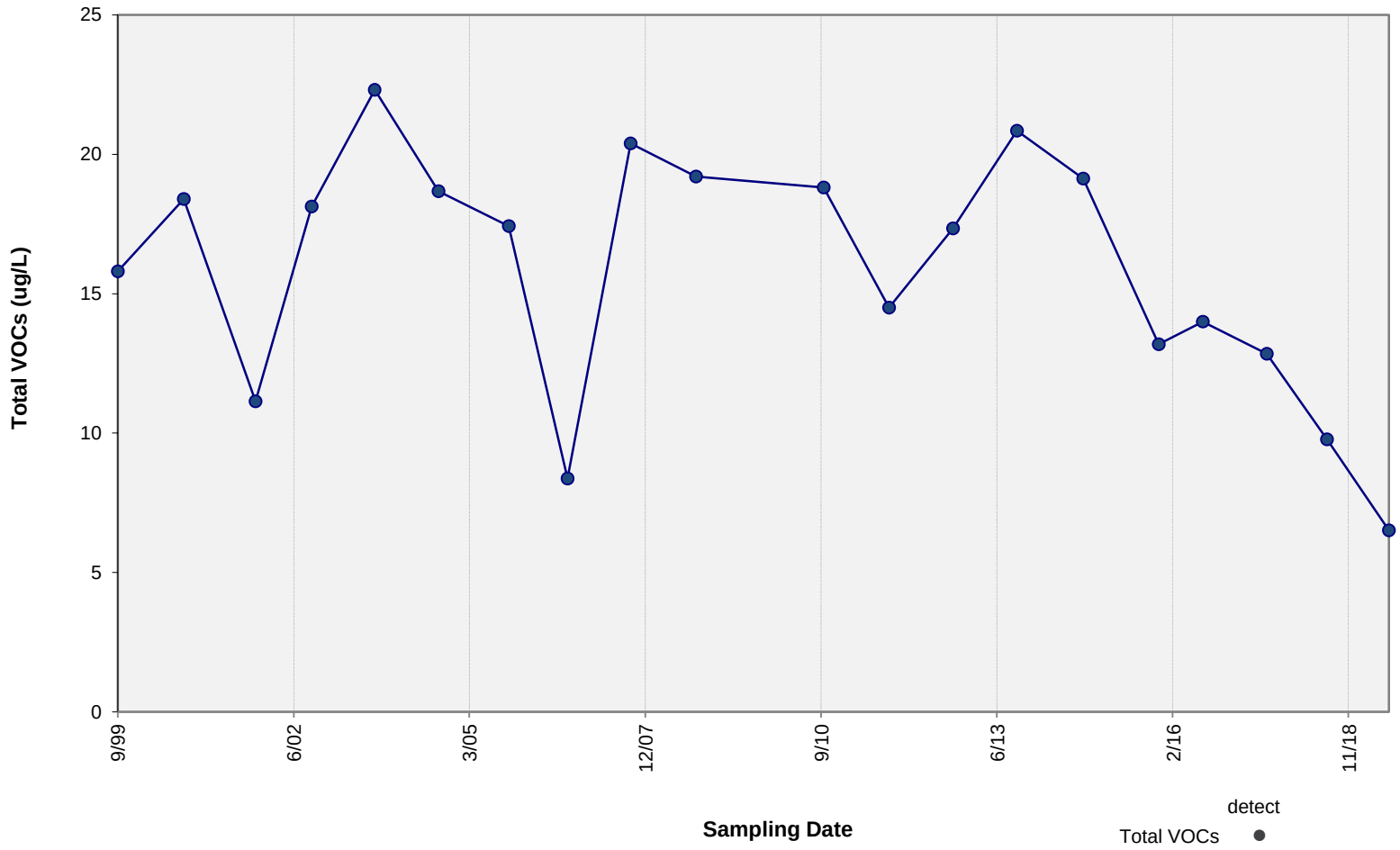
NST = no significant trend
DWN = downward trend
UP = upward trend

NOTES:

1. All analytical results are in µg/L. Result values less than 10 are reported to 2 significant figures; values greater than 10 are reported to 3 significant figures. P-values are reported to 3 decimal places.
2. Total VOCs represent the sum of all detected concentrations of individual VOC constituents.
3. Field duplicate results were not included.
4. Statistical testing of the null hypothesis: no significant trend (slope = 0) and the alternative hypothesis: significant trend (slope ≠ 0) with 95% confidence.
5. Statistically significant trend defined as having p-value ≤ 0.05, or 95% confidence.

REFERENCE:

USEPA. 2009. Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities. Unified Guidance. EPA/530/R-09/007, 2009.



Results of Mann-Kendall Test for Trend: **No Significant Trend**

p value = 0.056 Note: p value < 0.05 indicates a statistically significant trend (95% confidence level).

Results of Sen's Estimator of Slope: **No Significant Trend**

Median Slope Estimate = -8.6E-04 ug/L Per Day

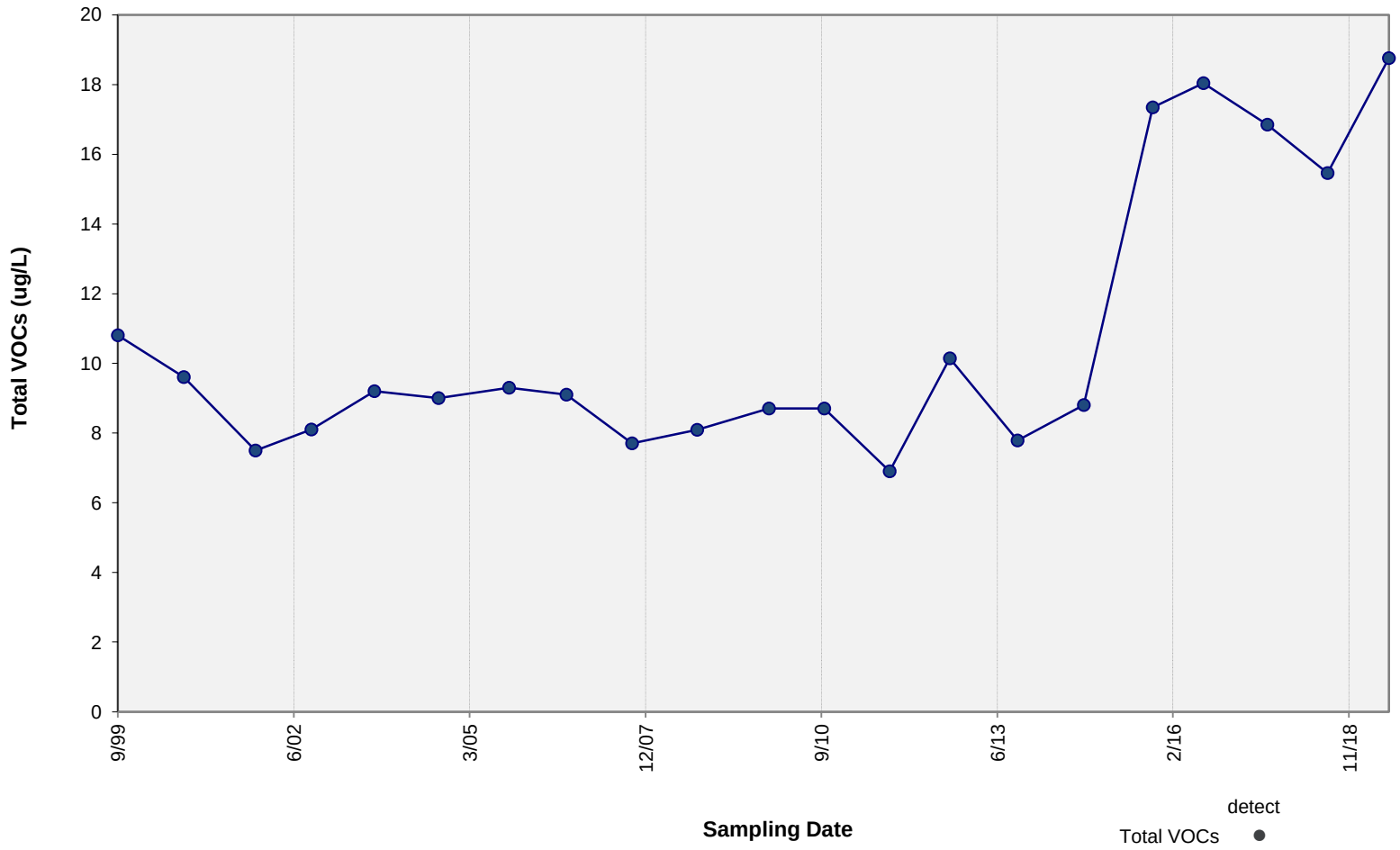
95% Confidence Interval = -1.8E-03 to 1.9E-04 ug/L Per Day

ARCADIS

Concentration vs. Time Plot – Total VOCs in Well GM-09

RACER Trust, Moraine, Ohio

FIGURE G-1



Results of Mann-Kendall Test for Trend: **No Significant Trend**

p value = 0.058 Note: p value < 0.05 indicates a statistically significant trend (95% confidence level).

Results of Sen's Estimator of Slope: **No Significant Trend**

Median Slope Estimate = 7.2E-04 ug/L Per Day

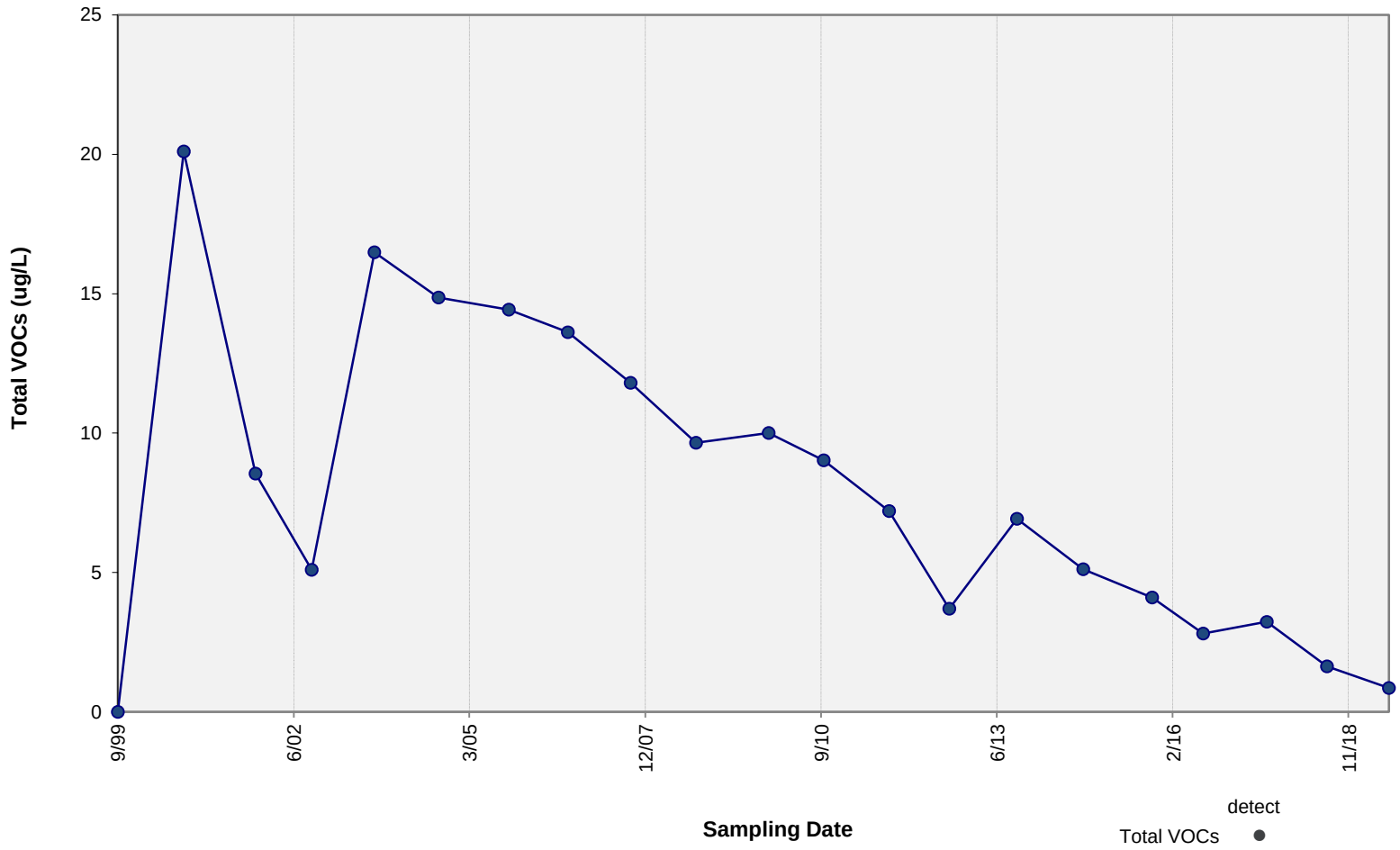
95% Confidence Interval = -1.2E-04 to 1.6E-03 ug/L Per Day

ARCADIS

Concentration vs. Time Plot – Total VOCs in Well GM-15

RACER Trust, Moraine, Ohio

FIGURE G-2



Results of Mann-Kendall Test for Trend: **DECREASING TREND**

p value = <0.001 Note: p value < 0.05 indicates a statistically significant trend (95% confidence level).

Results of Sen's Estimator of Slope: **DECREASING TREND**

Median Slope Estimate = -2.6E-03 ug/L Per Day

95% Confidence Interval = -2.8E-03 to -1.9E-03 ug/L Per Day

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Concentration vs. Time Plot – Total VOCs in Well GM-20D

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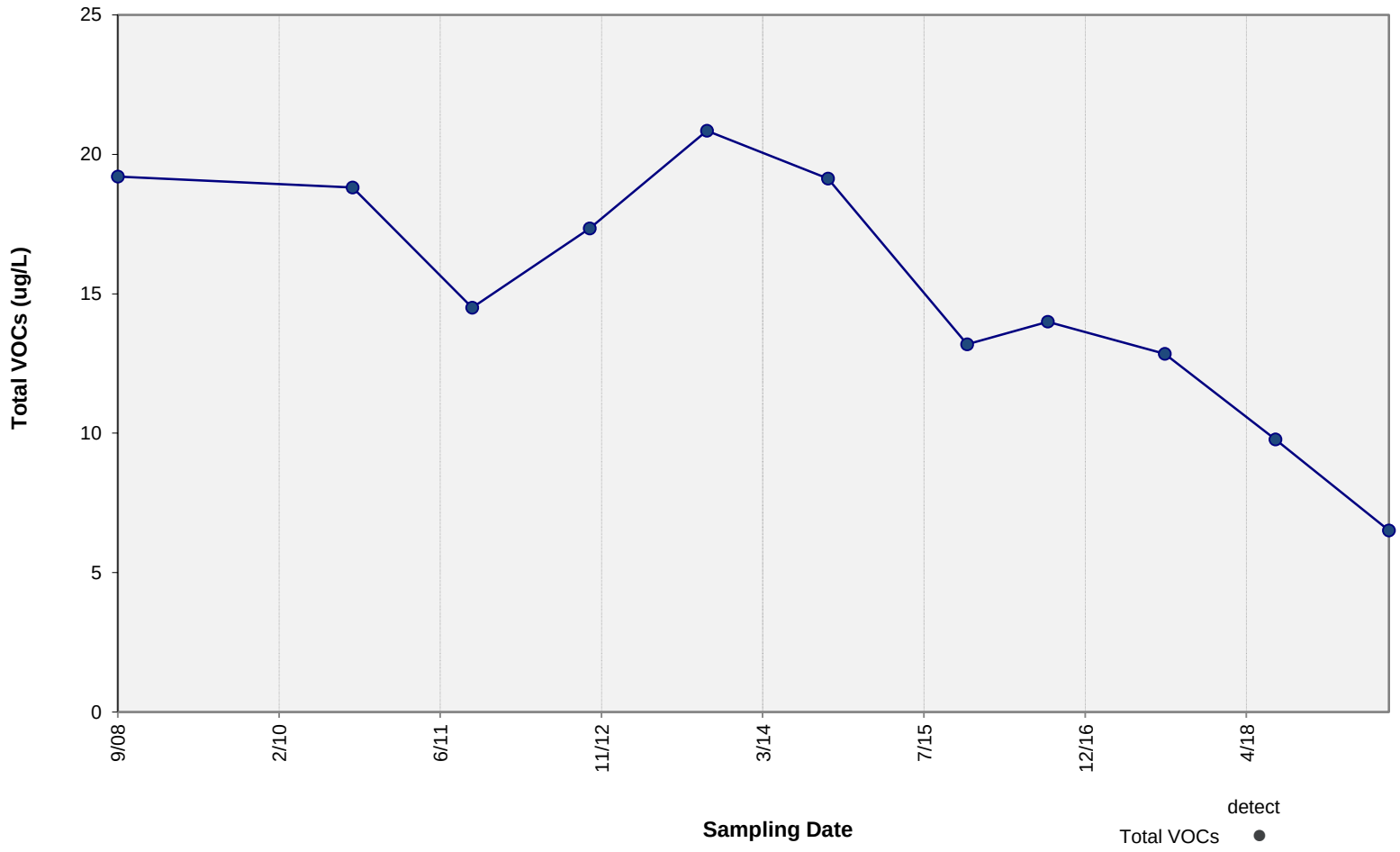
FIGURE G-3



Results of Mann-Kendall Test for Trend: **DECREASING TREND**

p value = 0.003 Note: p value < 0.05 indicates a statistically significant trend (95% confidence level).

Results of Sen's Estimator of Slope: **DECREASING TREND**

Median Slope Estimate = -3.0E-03 ug/L Per Day

95% Confidence Interval = -6.0E-03 to -1.2E-03 ug/L Per Day

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Concentration vs. Time Plot – Total VOCs in Well GM-09 (After July 2008)

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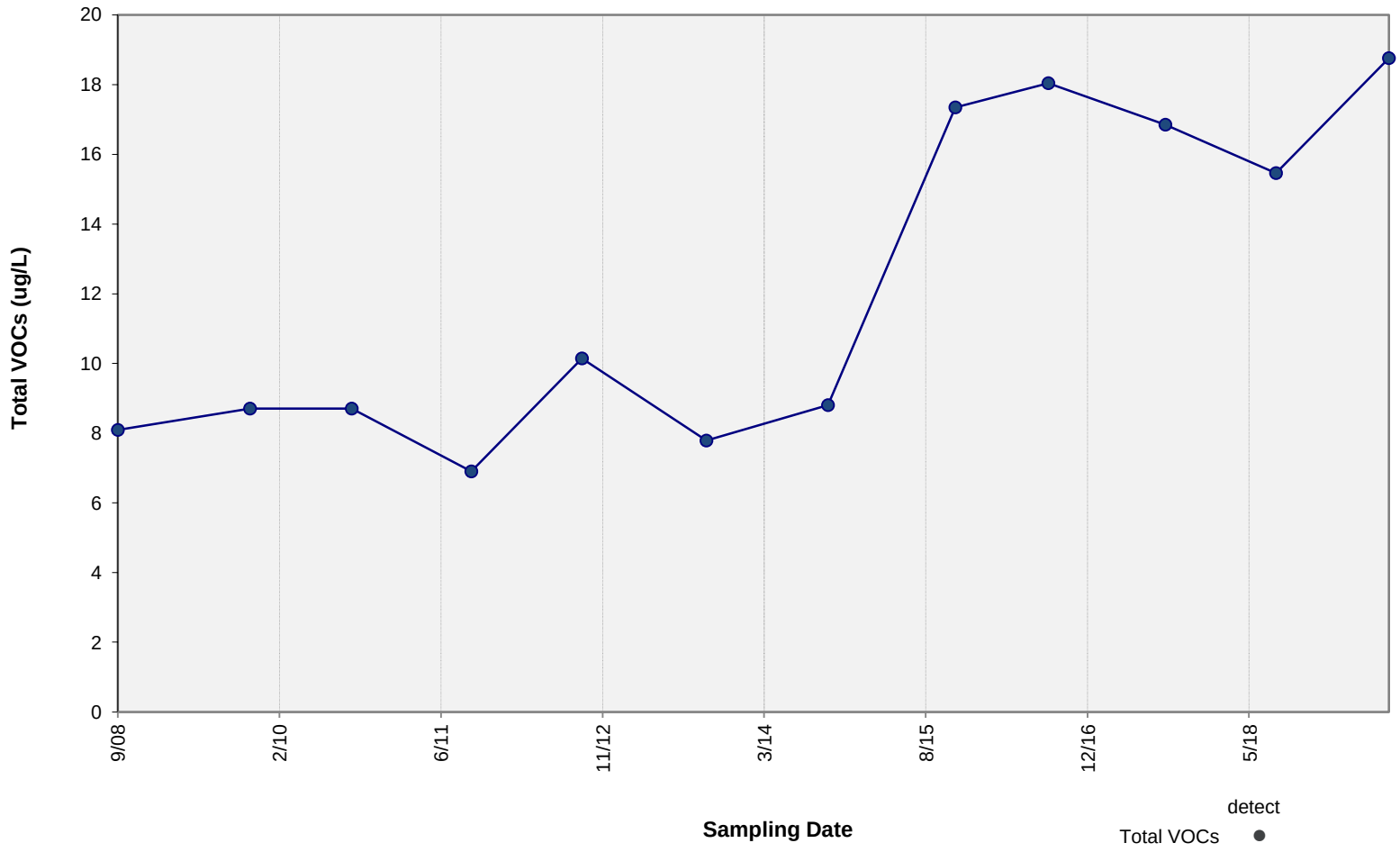
FIGURE G-4



Results of Mann-Kendall Test for Trend: **INCREASING TREND**

p value = 0.005 Note: p value < 0.05 indicates a statistically significant trend (95% confidence level).

Results of Sen's Estimator of Slope: **INCREASING TREND**

Median Slope Estimate = 2.7E-03 ug/L Per Day

95% Confidence Interval = 8.0E-04 to 4.2E-03 ug/L Per Day

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Concentration vs. Time Plot – Total VOCs in Well GM-15 (After July 2008)

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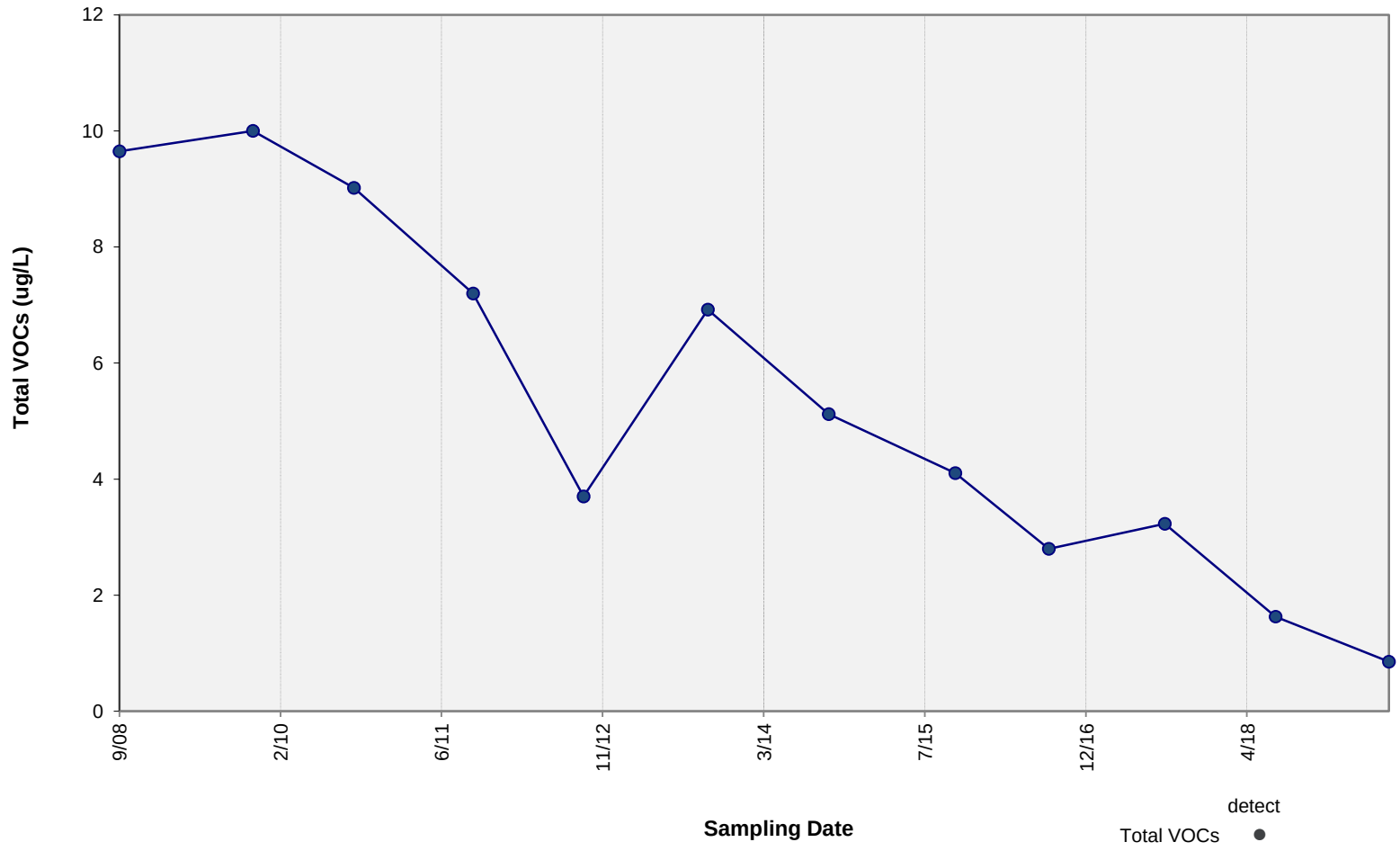
FIGURE G-5



Results of Mann-Kendall Test for Trend: **DECREASING TREND**

p value = <0.001 Note: p value < 0.05 indicates a statistically significant trend (95% confidence level).

Results of Sen's Estimator of Slope: **DECREASING TREND**

Median Slope Estimate = -2.4E-03 ug/L Per Day

95% Confidence Interval = -2.8E-03 to -2.0E-03 ug/L Per Day

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Concentration vs. Time Plot – Total VOCs in Well GM-20D (After July 2008)

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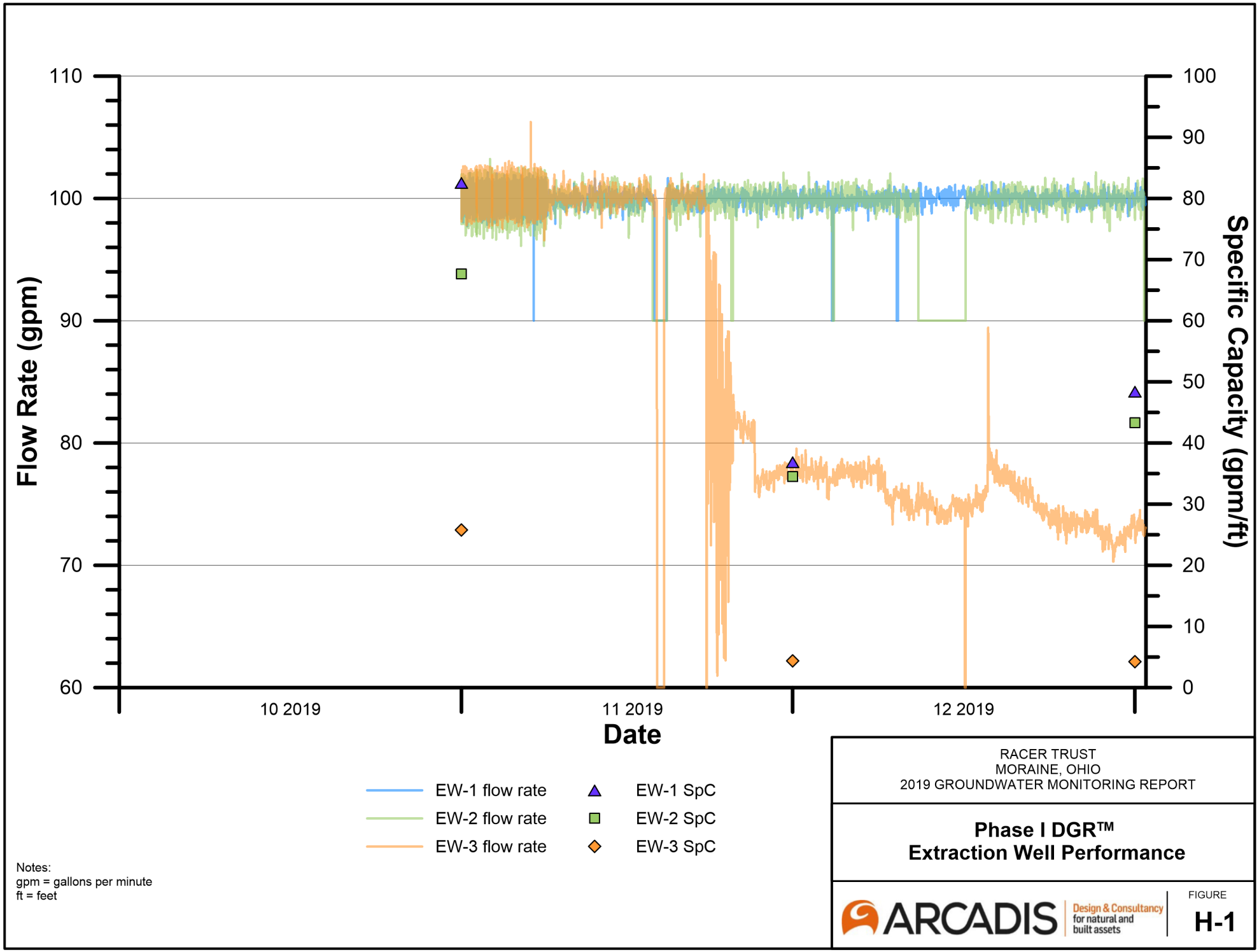
FIGURE G-6

APPENDIX H

Phase I DGR™ Operation Charts for 2019



Notes:
gpm = gallons per minute
ft = feet

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Phase I DGR™
Extraction Well Performance

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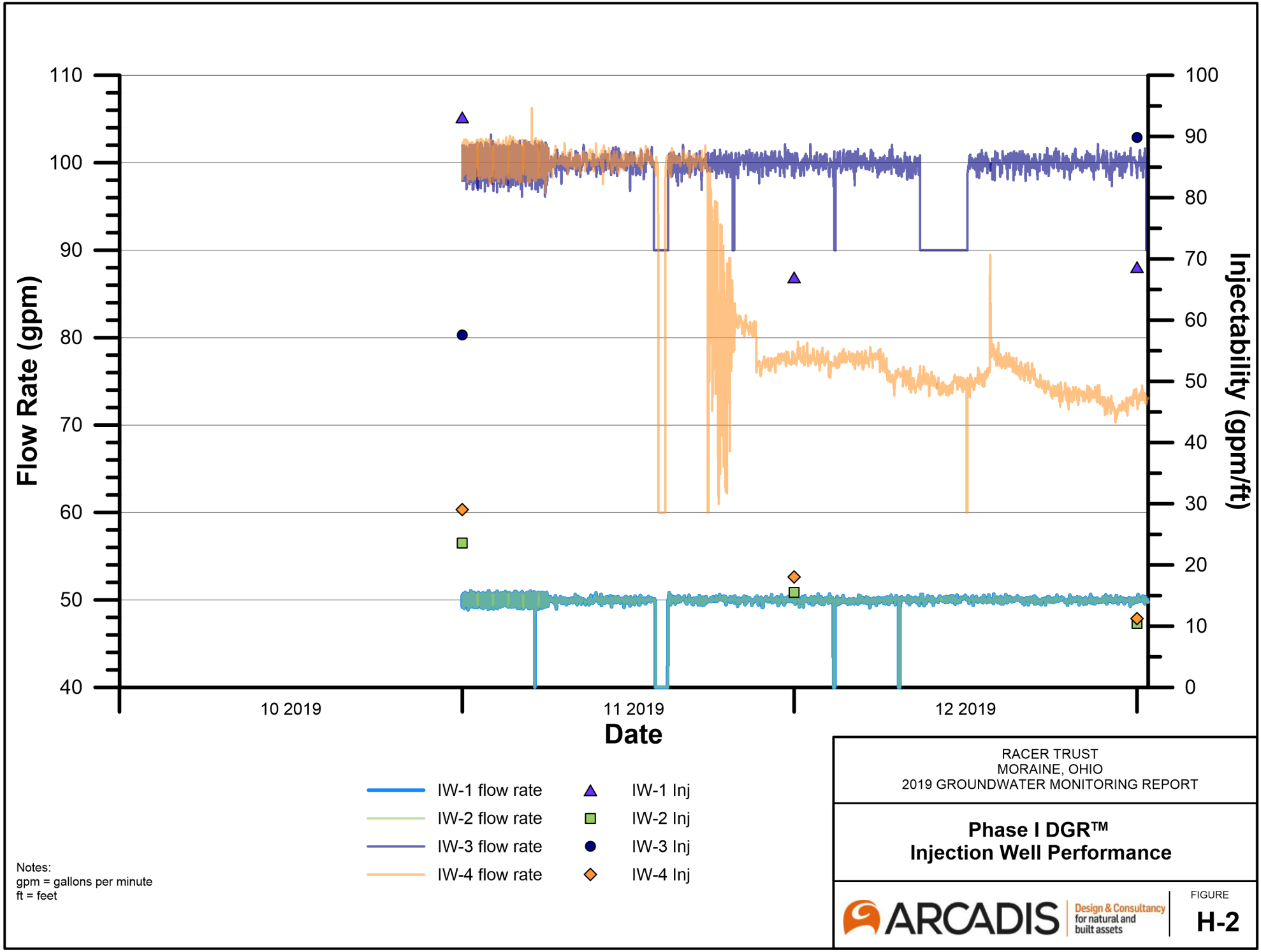
FIGURE
H-1



Notes:
gpm = gallons per minute
ft = feet

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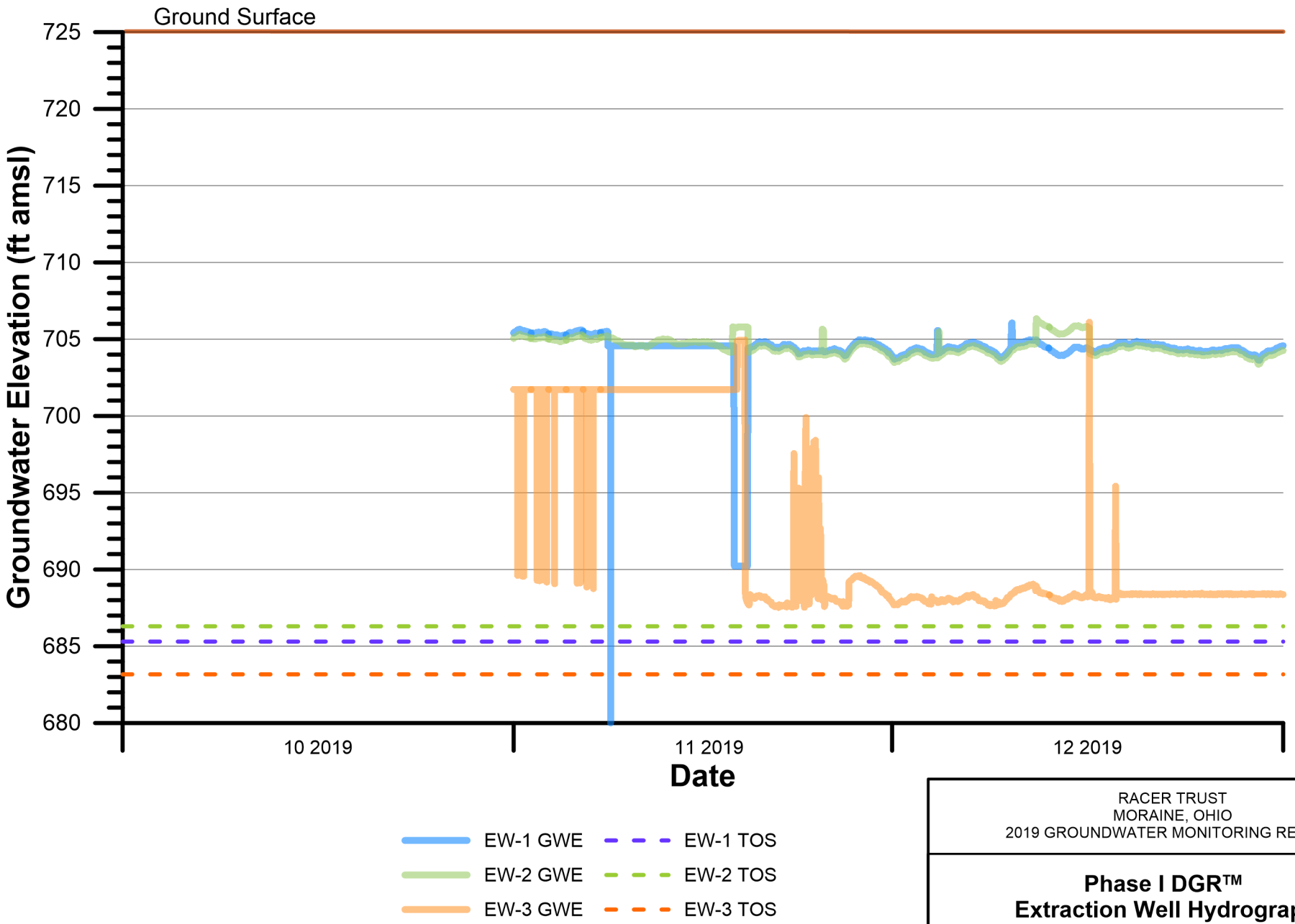
FIGURE
H-2



Notes:
amsl = above mean sea level
ft = feet
GWE = groundwater elevation
TOS = top of screen

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Phase I DGR™
Extraction Well Hydrograph

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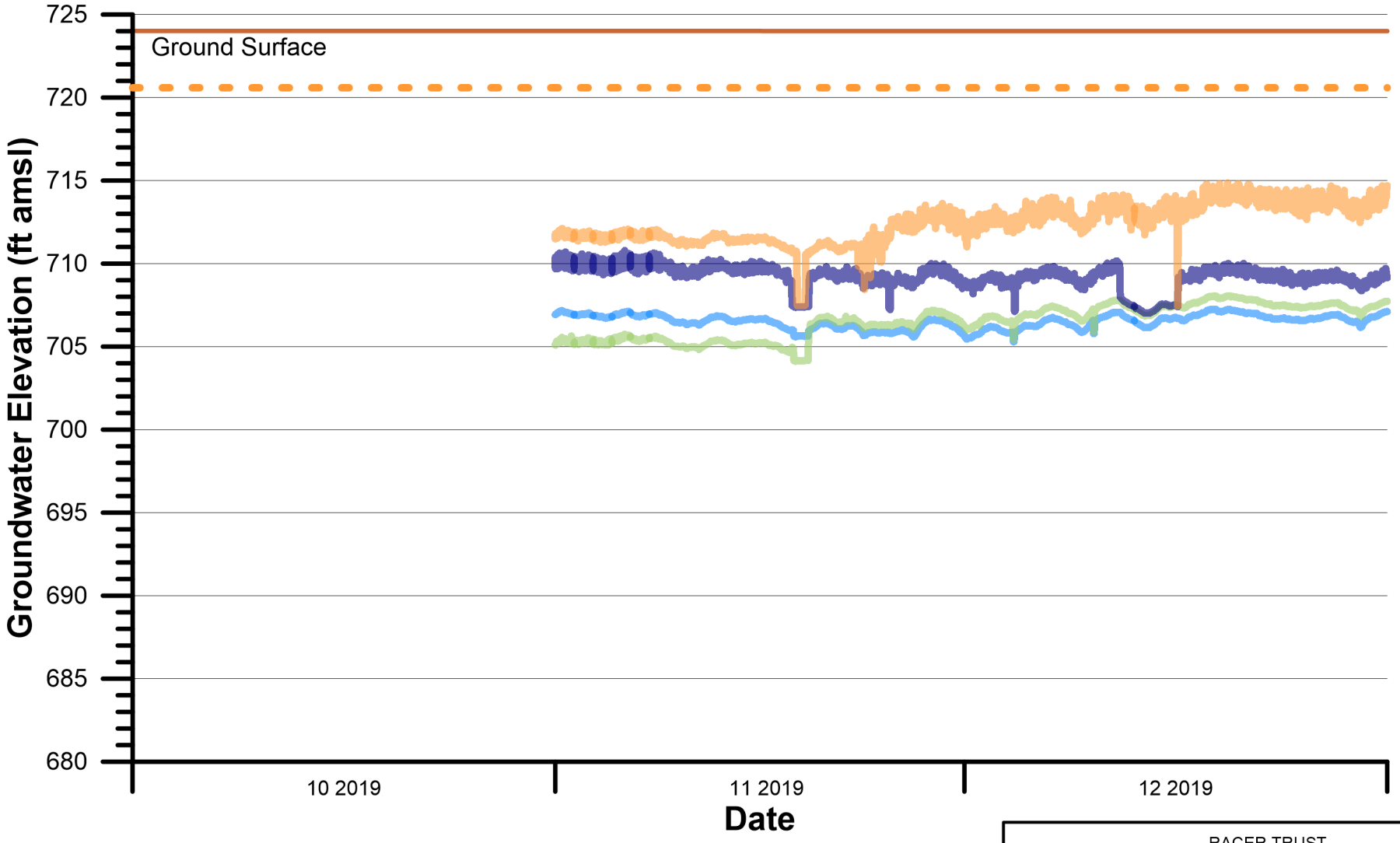
FIGURE
H-3



Notes:
amsl = above mean sea level
ft = feet
GWE = groundwater elevation
TOC = top of casing

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Phase I DGR™
Injection Well Hydrograph

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FIGURE
H-4

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